Surveillance Gone Too Far? Individual Reactions to the Use of Drones in Urban Areas.

By

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ABSTRACT

Unmanned Aerial Vehicles (UAVs), popularly referred to as ‘drones’, have increased in popularity over the past two decades. Various concerns have been raised about their implementation, primarily focusing on their surveillance capabilities. Through an intervention explanatory sequential design 80 participants (50F/30M) in South Eastern Ontario, Canada, were either exposed to a UAV (Experimental = 40) or not (Control = 40) and were given a word association task. From these participants, a subsample of 16 (F=7, M=9) respondents (8 from both groups) was taken for semi-structured interviews. The findings from the word association task indicate that the control group associated UAVs with more military applications and less positive admirations while the experimental group had the exact opposite results. Additionally, both conditions and genders found surveillance associations to be related to UAVs. Results from the semi-structured interviews indicate that individuals are influenced by previous knowledge surrounding UAVs and are primarily concerned about the surveillance implications for the following reasons: exposures to privacy, chilling/conforming behaviours, feelings of unease, signifies ‘Big Brother’, mobile cameras, gendered notions of surveillance and operation, and influences crime control and perception. Further qualitative analysis revealed that even though both genders found surveillance of UAVs to be an issue, they do so for different reasoning. Females were more likely to indicate the UAV being used to observe their body while males were more concerned with general uses of voyeurism. Overall, UAVs have the potential to evoke a sense of ‘surveillance gone too far’ depending on the context in which they are used. It is speculated that this aversion arises out of the power-space-visuality relationship UAVs hold, causing reactions to become more visceral.
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CHAPTER ONE: INTRODUCTION

The purpose of this section is to introduce Unmanned Aerial Vehicles (UAVs), their functions, and the concerns around their use in urban areas. This section will discuss the history of UAVs, their connections to surveillance, and their importance as a political tool. This will be followed by a literature review which will outline the current research that has examined individual responses to UAVs and their potential use in urban areas. The gaps observed in the literature will be discussed and the section will conclude with research questions posed by this project to fill these literature gaps.

What are UAVs?

UAVs, often referred to as ‘drones’, have increased in popularity within Canada over the past two decades (Wall and Monahan, 2011; Bracken-Roche et. al., 2014). The term ‘drone’ is named after a working male honey bee, as it can perform menial tasks under the control of an operator (Thomas, 2015). The device uses a group of sensors to measure velocity, orientation, gravitation, wind speed, among other variables, and sends this data back to a small computer controller that mathematically processes the incoming data. There are two different types of UAVs: fixed-winged UAVs and rotary UAVs. Fixed-winged UAVs are controlled by an elevator, rudder, and aileron, while rotary UAVs have four, six or eight separate engines and propellers, and rely on the speed of each blade for control (Thomas, 2015). Either form of UAV can serve a variety of purposes including, but not limited to: package delivery, journalism, crop spraying, finding missing persons, and the inspection of power lines (Salter, 2013; Bracken-Roche et al., 2014; Gynnild, 2014; Clothier et. al., 2015). They are most popular among hobbyists and real estate firms for their ability to capture landscapes and architectural shots (Willing, 2014). UAV photography has become a standard for real estate agencies and has become a staple for most photographers or
those interested in selling ‘images’ (Bracken-Roche et al., 2014). Various corporations have commented on and are in the testing phases of using UAV capabilities to better serve their customers (Bracken-Roche et al., 2014). For example, Amazon has a futuristic vision to have UAVs drop off their customers’ packages at their doorstep (Bracken-Roche et al., 2014). Law enforcement agencies have also begun to incorporate UAVs into their arsenal, mainly for the purpose of search and rescue and crime scene photography (Bracken-Roche et al., 2014).

The initial conception of the technology can be traced back to the time period during World War I through the work of Dr. Elmer Ambrose Sperry with his development of unmanned torpedoes (Bracken-Roche et al., 2014). Improvements were made on the technology during World War II, but then slowly experienced a decline after the war (McDougal, 2013). UAVs began to re-emerge in 2000 when the Central Intelligence Agency (CIA) began to use these devices for surveillance missions flying over Afghanistan (McDougal, 2013). After the events of September 11th, 2001, these devices were equipped with hellfire missiles and used to assassinate high-value terrorist targets (McDougal, 2013). They have since become vital to the military’s arsenal and have gained recent media attention due to their efficiency in warfare (Salter, 2013). Additionally, it should be noted that the development of UAVs also comes from civilian model aircrafts, and that both civilian and military trajectories may have led them for the use of various groups and organizations such as law enforcement and private corporations (Salter, 2013; Bracken-Roche et al., 2014; Thomas, 2015). However, it has been argued that this technology triggers obligations for concern, because of its extensive surveillance and social control capabilities (Frederik, 2014).

**UAVs and Surveillance**

Since UAVs are remote-controlled, silent, can stay airborne for extended periods of time, and numerous of them can be placed within a given area without compromising pilot security,
surveillance concerns have become increasingly prevalent. This argument arises out of the
designed nature of the device as it is a technological platform capable of equipping vastly different
tools for whatever job is required. The term ‘flying platform’ has been used to describe this device
both in the technological and political sense (Frederik, 2014). For example, the device is a concern
for surveillance theorists as presently a UAV can come equipped with 1.8 gigapixel cameras,
infrared cameras, electromagnetic spectrum sensors, gamma ray sensors, biological sensors,
chemical sensors, and equipment for ‘eaves dropping’ wireless communication technology, such
as cell phones (Frederik, 2014). Additionally, the technology is becoming increasingly
miniaturized and is routinely used for surveillance and reconnaissance missions, leading the
technology to be attributed with spying on individuals. However, as UAVs become increasingly
robotized and combined with precision weaponry and surveillance technologies, their impact on
the populations they operate over leaves a political impact for visual and social control. This is
because the device follows a historical trajectory in viewing the enemy from a distance without
consequence, allowing action to be made through increased visibility (Frederik, 2014).

The connection between surveillance and UAVs continues, as Murakami-Wood (2014) has
pointed out that surveillance technologies are increasingly becoming integrated and embedded into
environments and nature. He argues that surveillance technologies are continually vanishing as
they become smaller in appearance and are constantly embedded in other forms of technology.
Just how the smartphone is an apparatus of various technological formats (camera, phone,
notepads…etc.), so too is the UAV. Visibility is a built-in design for this system, as it can offer
more and multiple forms of visibilities, compared to common forms of closed-circuit television
(CCTV) cameras which are quite limited. Additionally, Murakami-Wood (2014) has argued that
these surveillance technologies are beginning to mimic biological organisms. For example, UAVs
mimic the size and flight of birds and insects, thus allowing them to better camouflage within the environment. Furthermore, Murakami-Wood (2014) builds on the notion that these flying platforms and the various other surveillance apparatuses are more than just physical platforms, embedded with different forms of technology, but also serve a political purpose. Their continued presence within an embedded environment further supports the notion of government ambiance and control all around (Murakami-Wood, 2014). With this continued trend in surveillance technologies, Murakami-Wood (2014) questions if there is a line between acceptable and unacceptable surveillance. This question was examined in relation to UAVs in urban areas in this research study.

Through the following sections, the question of how individuals associated UAVs to surveillance practices was explored and examined. First a literature review on the topic will be presented, discussing the current research on individual opinion of UAVs. This will progress to a relevant theoretical framework section that will draw on various surveillance theories that will be used to better understand the subjectivity individuals undergo when confronted with surveillance systems. From there the methodology of an intervention explanatory sequential design model will be explained as to why it was used and how the data was analyzed. Then the results section will be presented with statistical analysis and what themes were located through the research project. Lastly, the discussion will provide an analysis of the results and will be followed by the conclusion of the project.

**Literature Review and Research Objectives**

The purpose of the literature review is to provide an understanding of current knowledge on individual attitudes towards UAVs and where the gaps may lie. Additionally, this literature review will highlight why surveillance studies are important in examining this topic. A brief
literature review on CCTV cameras will be presented first as they are vital in understanding how individuals associate these devices with surveillance. Secondly, current understandings of UAVs and the roles they may play within the public space will be showcased. This will include recent empirical survey analysis of individual opinion towards their use, to identify current contentions surrounding urban UAV use. Lastly, the justification for where this research builds on literature gaps and why it is important will be addressed.

**Video Surveillance and CCTVs**

Video surveillance, or Closed-Circuit Television (CCTV), is one of the most publically recognized forms of surveillance. The CCTV camera system is the most referenced form of surveillance due to popular culture and, as a result, has become normalized by those who are exposed to them on a daily basis (Norris and Armstrong, 1998; Murakami-Wood and Webster, 2009). The individual never knows if they are under scrutiny by someone watching the screen or if they are just simply being ignored. Originally introduced to the public as an effective way of deterring crime and catching criminals, CCTV cameras were placed in urban spaces and have been found to have problematic effects upon individuals (Gill, Bryan and Allen, 2007; Murakami Wood and Webster, 2009; Lippert and Wilkinson, 2010). Various research ethnographies of CCTV camera operators have revealed that these observers are subject to biases and stereotypes associated with specific minority groups, resulting in discriminatory practices by the operators (Monahan, 2008; Lippert and Wilkinson, 2010). Additionally, it was found that CCTV cameras brought about gendered effects upon the observer and the one being observed. For example, female participants have reported feeling subjected to a perverted ‘male gaze’ (Brown, 1998) and male observers have been reported to focus on female bodies (Murakami-Wood and Webster, 2009).
It has been observed that CCTV cameras are able to enforce a certain amount of social control of what is acceptable in a particular space (Gill et al., 2007; Lippert and Wilkinson, 2010). Often, individuals reported that they felt uncomfortable with being under CCTV surveillance and felt like they had to ‘check’ their behavior (Gill et al., 2007). Furthermore, the use of CCTV cameras was introduced as a way to deter crime and protect the interests of the institutions that were using them (Gill et al., 2007; Lippert and Wilkinson, 2010). However, it was found that crime was just dispersed to other areas where there was no CCTV oversight (Lippert and Wilkinson, 2010). Additionally, CCTV cameras seem to bring about mixed feelings among respondents who often perceive that they have a greater feeling of security, yet also feel the scrutinizing gaze of surveillance causing them anxiety. This is because the presence of CCTVs in an area symbolizes that the area is unsafe and must be watched constantly (Schneier, 2003; Gill et al., 2007: Lippert and Wilkinson, 2010).

Furthermore, past CCTV studies have shed light onto how individuals assign meaning and themes when they have noticed that they may be under surveillance. A study by Walton, DeVaney and Sandall (2011) examined graduate students’ perceptions of privacy when thinking about CCTV cameras in urban areas. The study found 8 prominent themes: the right to safety, the right to privacy, personal privacy responsibilities, post-CCTV sense of privacy, post-CCTV sense of safety, crime displacement, a false sense of safety, and international perspectives. Additionally, gender differences were found regarding participants’ initial perceptions of safety, post-CCTV implementation. Furthermore, a study by Timan and Oudshoom (2012) examined how individuals in a Dutch city would react to the presence of a mobile camera, compared to a traditional stationary CCTV camera, through an intervention methodology. They found that participants considered mobile cameras an aspect of surveillance and produced more negative reactions to them because
they were less likely to know how the footage was being used when compared to the stationary CCTV cameras.

Since CCTV cameras have a longstanding association with surveillance practices, and the use of them has been attached to UAVs, understanding how they have affected individuals is important to consider. CCTV cameras have been known to affect individual subjectivity and have produced circumstantial behavioral changes, such as crime displacement and feelings to conform. Often bringing paradoxical feelings of security and uncertainty, this perception of surveillance may be translated into how individuals perceive UAVs. What is important to explore, however, is how the free-range motion UAVs bring may influence this perception of surveillance.

**Unmanned Aerial Vehicles in the Urban Areas**

As UAVs have increasingly become more common place within urban areas, they have begun to be more broadly used by various groups and organizations to better suit their interests. This has led to much theoretical debate over the imbalances in power that UAV technology may bring. Questions of who is allowed to use it, and for what purpose has arisen. It has been argued that specific spaces, such as the atmosphere, need to be re-imagined in terms of capitalist intentions and the potential consequences this technology may bring if used improperly. UAV technology and the impact it has had on the restructuring of space and regulations is important to consider, as different groups who operate this technology may bring different dimensions to the lives of the individuals who come into contact with these flying platforms.

As Stuart Hodkinson (2012: 507-508) explains, “Capital must… continuously and simultaneously devise ‘strategies of enclosure’… to open up new areas of commodification.” Enclosure refers to the privatization and securing of common spaces, it operates by territorializing new social and spatial relations into the landscape. With the birth of air power, Shaw (2016) argues
that enclosure now operates through an atmospheric spatiality, which has enabled new vertical regimes of state power, capital accumulation, and violence. He considers the atmosphere to be an emerging frontier for the ‘dronified’ forms of enclosure in how it is productive of new anxieties, morphologies, and subjects (Shaw, 2016). This is especially important as Walters (2014: 102) explains that objects themselves perform spaces of enclosure, and “mediate relationships of power, agency, and governance over time and space, and shape social and political processes by virtue of their irreducible presence.” Therefore, Shaw (2016) suggests that the atmosphere needs a “re-enchantment” with vibrant material, artificial intelligence, marauding machines, and rebellious objects. This new ‘dronified’ landscape generates both opportunities and discontents for the state, pushing for a police pursuit of mastering the atmosphere (Wall, 2013).

Salter (2014) argues that police UAVs are the newest form of the ‘weapons fetish’ and ‘militarization of the police force’ as they embody a transfer of military technology into policing. Despite the international controversy UAVs have caused overseas, they are continually being sought after from domestic law enforcement agencies in the pursuit of policing (McBride, 2009). Additionally, this ‘fetishization’ of UAVs is argued to be based in a historical context of masculinity demonstrated by the gathering and stockpiling of military weaponry at the ready with the aims of control and domination in the face of unprecedented social, economic and cultural change (Salter, 2014). Salter (2014) suggests that the police demand for UAVs is set in a militarized subject position as a legitimate means of enforcing crime control strategies. Wall (2016) reaffirms this perspective, explaining that militarized police forces have a tendency to discriminate against visible minority populations, and that the advent of UAV technology may further exacerbate the issue. Therefore, as UAVs begin to take over the atmosphere it is important
to understand the anxieties they may generate and how these are created by certain groups who operate this technology.

Currently, the research on individual opinion concerning the use of UAVs domestically is quite limited. This is partially explained by how recent this topic has emerged and the lack of actual UAV usage in populated areas. Fortunately, various surveys have been conducted on the issue, addressing the general attitudes towards the usage of UAVs in urban environments. Even though they are small in number, these recent studies do help to illuminate the overall opinion towards UAVs in populated areas.

In 2013, a United States web-based survey conducted by the Institute for Homeland Security Solutions, captured the general attitudes of 2119 individuals towards the usage of UAVs (Eyerman et al., 2013). This survey found that individuals had a low level of awareness surrounding the use of UAVs, with a little less than half (44%) reporting that they knew very little or nothing about UAVs (Eyerman et al., 2013). It was also found that just over half of respondents supported Homeland Security’s use of UAVs, with high levels of support for fighting crime, search and rescue, and commercial applications. However, it was noted that the sample did not generally support the use of UAVs for everyday patrol and are somewhat concerned over potential monitoring of homes and urban spaces. Furthermore, there was concern over safety issues and the ability of the government to regulate UAV use (Eyerman et al., 2013). The results from this study suggest that the respondents are not quite aware of the use of UAVs in a domestic context, are concerned about the potential safety issues, and are not in support of using them for routine patrol and other potential privacy violating situations.

A similar web-based survey of 3045 individuals across Canada also found that individuals had low levels of awareness towards UAVs and what they could be used for (Bracken-Roche et
This study examined the differences in attitudes concerning UAV usage in two groups: law enforcement and corporate organizations (Bracken-Roche et al., 2014). It was found that only specific applications of UAV usage by both groups were supported. (Bracken-Roche et al., 2014). Support for law enforcement usage centered on disaster response, finding missing persons, and hostage situations (Bracken-Roche et al., 2014). There was little support for routine monitoring, criminal investigation, and identification at political demonstrations (Bracken-Roche et al., 2014). The findings for corporate use were also diverse, with support only occurring for agricultural spraying, inspection of power lines, and patrol of mining and fishing areas. Minimal support was found for their use for personal security, private security, and market and advertising. In addition, it was found that there was more support for law enforcement use than corporate use of UAVs. Finally, participants were not in favor of having these flying platforms being used around their homes and used by the Canadian government (Bracken-Roche et al., 2014).

The literature has also briefly examined how individuals perceive risk associated with the use of UAVs in populated areas. When a new technology is being introduced to the, individuals undergo a cost-benefit analysis associated with risk (Clothier et al., 2015). This analysis is based on the following factors: benefit, knowledge, control, voluntariness, fear, novelty, and consequences (Clothier et al., 2015). A web-based survey of 510 participants in Australia found that risk and safety around UAVs are not yet a concern, and the overall perception of benefits was found to be neutral (Clothier et al., 2015). The authors explain that these results are due to a lack of knowledge concerning UAVs, yet respondents did express that they are eager to learn more about them (Clothier et al., 2015). The findings of this study further suggest that UAVs are relatively new, and that issues surrounding risk and safety of such devices are not yet a concern.
The literature presented above illustrates the current theorization and empirical data that has been conducted on UAVs within urban areas. This technology seeks to change how individuals view the atmosphere, and it may change how certain groups operate and investigate (i.e., law enforcement and various corporate entities). However, there seems to be a low perception of this technology, with differing forms of opinion for how they are used. Therefore, it becomes important to study the opinions and reactions individuals associate with this technology, especially as UAVs gain more popularity. Given this significant knowledge gap within the literature, largely due to the novelty of UAVs, there is a need for a qualitative study examining how individuals come to perceive the surveillance aspect of UAVs and anything else that might be of importance through an exploratory lens. Another knowledge gap in the literature was the lack of examining if any social variables (class, gender, ethnicity…etc.) affected the perception towards UAVs. Through this research, contributions can be made towards aviation policy on safe and proper UAV use by understanding the subjective effects this technology can evoke upon individuals.
CHAPTER TWO: THEORETICAL CONCEPTS AND UNDERPINNINGS

The purpose of this section is to introduce the main theoretical frameworks that were used in analyzing the results of this research thesis. These selected theoretical concepts and underpinnings were chosen as they are well suited to understanding how individuals react and behave to various forms of surveillance technologies. This section will start by introducing Michel Foucault’s *Discipline and Punish* (1977) and Erving Goffman’s *The Presentation of the Self in Everyday Life* (1959) as fundamental thinkers to how individuals react when being observed by others. Then, through a combined framework of Hille Koskela (2003), Kirstie Ball (2009), and Robert Pallititto (2013), a better understanding can be made as to how individuals perceive UAVs through space, subjectivity, and power, respectively, with relation to surveillance.

Surveillance, Discipline, and Privacy

Within surveillance studies, Foucault is considered a foundational thinker for contemporary surveillance theory (Wood, 2003; Simon, 2005). In *Discipline and Punish*, Foucault used the metaphor of the ‘panopticon’ - a prison model created by Jeremy Bentham - to explain the creation of modern subjectivity (Wood, 2003: 235). This modern subjectivity is the belief that one is under current scrutiny and must therefore self-monitor their behavior (Wood, 2003: 235). Though the discipline is currently shifting away from a Foucauldian perspective, it still serves as a useful tool when engaging with visual surveillance systems. For example, it is possible through this framework that a UAV within an individual’s area could evoke similar feelings of discipline to avoid potential consequences.

Furthermore, to understand how UAVs fit within the surveillance panoptic idea, the idea of the ‘panopticon’ must first be explained in greater depth. In *Discipline and Punish: The Birth of the Prison*, Foucault uses Jeremey Bentham’s idea of the Panopticon, a prison that would evoke
self-regulation among the inmates, as a metaphor to explain how individuals’ self-discipline themselves due to the disciplinary power of society (Foucault, 1977). Essentially, the panopticon is a ‘state of mind,’ in which individuals normalize their behavior to the regulations of society to avoid punishment and discipline (Foucault, 1977: 206). For this mechanism to work, all that is needed is an ‘inspecting gaze’ of some kind, which serves to be a subtle reminder to the individual that they might be under surveillance (Foucault, 1977: 200). This ‘gaze’ does not have to be real - all that is needed is for the individual to feel like they are being watched (Foucault, 1977: 201). Within this construct, the overseer - or the one conducting the surveillance - must never be seen so that the individual is always guessing if they are under surveillance (Foucault, 1977: 201). It is therefore central to this construct that power be unverifiable and that the threat of discipline through visibility be maintained for the panopticon to be effective. The goal of this social control mechanism is for the individual to become their own overseer and constantly self-regulate their actions through ‘subtle-like’ reminders that they may be under surveillance. To this end, the individual acts in accordance with the rules of society under continuous threat of discipline and punishment, thereby allowing power to be exercised over them (Foucault, 1977).

It should be noted that the analytical focus into the relationship between the overseer and the inmate is made up of multiple directions within surveillance theory. For one direction is placed in the process of subjection and normalization through the internalization of the gaze, while the other in the process of administration, social sorting and simulation of embodied subjects (Simon, 2005). What is relevant to this project is the former selection, the focus on subjection, normalization, and internalization.

UAVs are fundamentally flying platforms, and, for the most part, they are equipped with cameras with video recording capabilities, which leads to concerns over surveillance and privacy.
The camera itself already generates the ‘inspecting gaze’ among those caught in the camera’s vision, but by being mobile it makes it more difficult for the individual to escape that gaze. UAVs are also unverifiable: it is almost always impossible to know who is flying the UAV and where they are situated since they can be operated in private rooms and often from miles away. UAVs may reinforce the idea of constant self-monitoring due to their mobility and unverifiability factors. According to Wood (2014), UAVs may be seen as post-panoptic as they further reduce visible signs of disciplinary surveillance, signifying a post-panopticism of control of the area. Moving away from the panoptic perspective of surveillance is important as critiques have debated that it is not necessarily the best metaphor when discussing contemporary surveillance (Poster, 1990; Norris and Armstrong, 1999; Bauman, 2000; Lyon, 2001). Post-panopticism is tied to the idea of discipline of specific places, while current postmodern societies of power, control and order seem to have become dispersed and flexible. This is important to consider as UAVs are not tied to specific locations; they can be dispersed to input control and order in specific areas when needed.

With this in mind, it is important to consider the impacts this technology may have on privacy for individuals who are caught within its gaze. As UAVs are able to move around freely within the atmosphere, they have the ability to interfere with private property. However, ‘privacy’ is difficult to conceptualize, inadequate to fulfill everyone’s needs, and is not an ‘antidote to surveillance’ (Stalder, 2002). It has been argued to be too narrow, implicated in rights-based theory and discourse, insufficient to the discriminatory aspects of surveillance, culturally relative, and overly involved in spatial metaphors (Stalder, 2002; Bennett, 2011). The concept has its roots in liberal individualism and focuses itself on protection of the self from the state (Bennett, 2011: 486). This gives the concept a bourgeois notion of association with an individual’s property,
narrowing its range amongst the entire population (Stalder, 2002). The inherent problem is its subjective nature which empowers some while marginalizing others.

However, as Norris and Armstrong (1999) suggest, if surveillance is seen as a form of power, it is necessary to consider how that power is held and limited in its operation. Which is why Bennett (2011: 494) argues that even though privacy cannot be viewed as the ‘antidote to surveillance,’ and he does agree with Solove (2008) that it is a conceptual problematic nightmare, it is still relevant. Like it or not, ordinary individuals still view privacy in its classical liberal framework bringing importance to contemporary surveillance issues (Bennett, 2011: 495). Therefore, as Bennett (2011: 495) argues, privacy is not going to disappear as it frames policy, advocacy, and activism as new surveillance technologies and practices continue to take shape. Even with its problematic nature, the concept of privacy among individuals is important to consider as they interact with UAVs around their area or over their property.

**Presentations and Theatrical Performances**

In the *Presentation of the Self in Everyday Life*, Goffman (1959) describes the interactions between individuals as akin to those of a theatrical play. Goffman (1959) noticed that when individuals are in the presence of others they present themselves in ways to guide or control the impressions that the other might make of them. Individuals may change or fix their setting, appearance, and/or mannerisms to match their desired performance. While this is occurring, the person with whom the individual is interacting with is trying to collect and analyze information about that individual. Goffman (1959: 12) concluded that all participants in social interactions are engaged in these practices to avoid being embarrassed or embarrassing others. He views the performance an individual presents to be comprised of two elements: a front stage and a back stage. The front stage is where the individuals express what they believe to be the desired
impressions in the forms of manners and appearances (Goffman 1959: 22). The back stage consists of an individual’s private world, in which they can prepare for, or set aside their role (Goffman, 1959: 112). To further their construction, individuals may utilize props within their environment in order to make the performance more believable and may continually modify their behavior based on how they believe their audience may react.

The main goal for an individual is to keep coherent performances for familiar individuals through pre-existing fronts, props, and appearances in the forms of pre-established scripts and routines of their behaviors. To further the coherency of their performance, individuals will often look to what is the agreed-upon definition of the situation as it serves as a guide for appropriate behavior of the environment. This is created and maintained by the parties that the individual interacts with. If the definition of the situation is discredited, some or all of the actors may pretend that nothing has happened in order to keep the peace and deter unwanted attention onto themselves (Goffman, 1959: 26-27). This constant thematic illustration of shaping behavioral patterns based on observation of others is relevant to the field of surveillance studies and for the purpose of this research project.

Goffman’s (1959: 112) concept of the ‘back stage’ is similar to the notion of privacy discussed earlier by Bennet (2011). As there is a spatiality dimension to how individuals conceptualize privacy, an intrusion into their ‘back stage’ would feel like a violation in which they could neither prepare for, nor set aside their role. Secondly, this constant modification of behavior based on what others may be thinking shares similar analysis to Foucault’s panoptic metaphor (Simon, 2005: 6). The individual must perform to the expected norms and behavior or risk disciplinary action. The awareness that a UAV may be watching an individual may evoke a sense of self-discipline in order to avoid observation. All together, the works of Foucault and Goffman
are crucial in understanding how individuals act towards ‘the other’, what they determine to be
important norms and definitions of the situations they are in, and how UAVs are part of an audience
they must now perform for.

**Visual Control**

Despite the critique that the theoretical use of the Panopticon has garnered, Koskela (2003)
suggests that both Bentham’s original idea (1843) and Foucault’s (1977) interpretation may
continue to help us understand some of the postmodern forms of control. By examining
surveillance cameras in cities as objects of power through visibility, Koskela (2003) extends
Foucault’s work on power and space. As Koskela (2000: 257; 2003: 296) argues, the relationship
between power and space changes as space is crucial to the exercise of power, but reciprocally,
‘power also creates a particular kind of space’. For power to be effective, it hinges on the use of
visibility, both in that the observer has complete vision of the area, and that individuals know they
have the potential to be seen. While surveillance cameras have the function of overseeing an area,
they also serve another purpose of indication. To Koskela (2000: 253; 2003: 299) surveillance
cameras are analogous to the overseers in the Panopticon: they are unverifiable and their use
imposes self-vigilance on individuals who are aware of their presence. Visuality connotates with
power, which is why new surveillance technologies are often highly appreciated by law
enforcement agencies. These agencies can see more with the same amount of personnel, while
exercising an effective amount of power over that area (Koskela, 2003).

Yet the surveillance camera creates a dualistic relationship, charged in emotion. On one
hand, it can make an individual feel safe, but on the other, it can signify a location of danger
(Koskela, 2003:300). At the core of Koskela’s (2003) analysis of Foucault’s space-power
relationship is the aspect of emotion. Surveillance itself is an emotional event as it evokes a variety
of feelings for individuals. For example, many individuals have reported that they start to feel guilty, embarrassed, uneasy, shameful, irritated, secured, and safe when they feel they are being watched (Koskela, 2003: 300). This allows the individual to perceive visible surveillance to be one of acceptance, empowerment, or resistance. Additionally, there are cultural codes and politics of seeing, and being seen is deeply gendered. For example, the female body is an object of gaze in different ways than the male body. While in the Panopticon metaphor, the disciplinary practices are rather rigid, and in cities, control is always contextual. What is acceptable in a particular time and place varies. These norms vary according to gender, sexuality, age, and other factors. (Koskela, 2003: 301).

Since UAVs commonly have surveillance video cameras attached to their apparatus, the effects of visual surveillance and what feelings and perceptions it evokes in the subject is important to consider. As Koskela (2003) discusses, the space, power, and visuality relationship of surveillance video cameras, it is possible to assume that UAV mobility allows this relationship to be further extended among areas. Additionally, due to the emotive aspect of surveillance, some individuals may either accept, tolerate, or resist UAVs in their area, depending on the contextual norms of the area. Visual surveillance may evoke a sense of discipline and performance among individuals, but it is ultimately contingent on the social characteristics of the individual and the accepted norms of the area for power to be effective.

**Exposure**

Ball (2009) sets out to understand the effects of surveillance through the perspective of being ‘exposed.’ Ball (2009: 641) acknowledges that even if it seems that surveillance is tolerated, this does not mean it has no effect on the individual. She set out to understand the effects of surveillance and how this makes an individual feel by examining the inner workings of a call center
of how they surveil their employees (Ball, 2009: 642). She discovered that the workplace surveils their employees in terms of how effectively they work and how they act in accordance with the rules of the environment (Ball, 2009: 642). Since the employees were aware of being under surveillance by their employer, they internalized their actions and blamed themselves for their work performance, instead of the system which may be the cause of their work issues (Ball, 2009: 642). To understand the effects of being ‘exposed,’ Ball (2009) examined the current definition of the word and found parallels to current themes in surveillance studies. Exposure is defined as: “the act of subjecting someone to an influencing experience; abandoning without shelter; presentation to view in an open or public manner; the act of exposing film to light; a picture of a person or scene in the form of a print or transparent slide; recorded by a camera on light-sensitive material; vulnerability to the elements; to the action or heat or cold or wind or rain; aspect regarding light or wind; the disclosure of something secret; the intensity of light falling on a photographic film or plate and the state of being vulnerable or exposed” (Ball, 2009: 647). The sense of being ‘exposed’ brings up feelings of safety, vulnerability and the thrill of being seen (Ball, 2009). Ball’s examination and incorporation of ‘exposure’ into surveillance studies allows for the comprehension of how individuals feel when they are aware that they are under surveillance.

As surveillance became increasingly central to how we conduct ourselves in society, Ball (2009) points out that a ‘political economy of interiority’ has arisen. Ball (2009: 643) defines this as a process where an aspect of an individual’s personal or private world becomes exposed to others via a process of data representation, interpretation, and sharing through intermediaries within a broader surveillance assemblage. She chooses this term because a variety of institutions have become associated with technology, media, employment, and consumption. These
institutions are implicated in creating demand, mobilizing resources, and supporting and legitimating practices (Ball, 2009: 643).

The next concept that Ball (2009) addresses concerning the effects of surveillance on individuals is the ‘performative challenge.’ This occurs when an individual becomes aware of being captured on surveillance and they are challenged to behave in a way that the system dictates as acceptable for a given space (Ball, 2009: 645). In turn, this creates a form of control over the individuals who inhabit that space. Ball (2009: 648) is keen to note that the ‘control’ institutions produce are often a by-product of techno-centric managerial processes. Institutions impose their own sets of rules and regulations on individuals which enable them to manage large groups of people with a minimum number of staff (Ball, 2009: 648). This institutionalization process also embeds meanings, notions, and organization strategies into the individual, to regulate their behavior (Ball, 2009: 648). For the most part, institutions use technocentric surveillance to protect their interests from individuals who may want to harm them and do not consider the mental effects it has on those who are exposed to their surveillance (Ball, 2009: 648).

By examining Ball’s notion of ‘exposure’ and the current research on responses to CCTV cameras, it can be theorized how UAVs can further extend the notion of being ‘exposed.’ Once again, equipped with cameras and by being able to fly around an area instead of being fixed to a single location, UAVs may enforce institutionalized control among the populace of an area. The notion of the ‘performative challenge’ is extended and the population can be better managed with a smaller number of UAVs in relation to CCTVs. Furthermore, UAVs may further contribute to the ‘political economy of interiority’ as already UAVs are being used by journalists and media outlets in order to better see events and individual reactions (Gynnild, 2014).
The purpose of using Foucault’s metaphor of the panopticon and the notion of Ball’s ‘exposure’ in combination to the current research of CCTV cameras is to illustrate the surveillance power that UAVs can have. By being ‘flying platforms’ with cameras attached to them, the self-disciplinary gaze is constantly evoked upon the individual, since every space is now under the influence of whoever is in control of the UAV. Power becomes further extended and the force behind the surveillance is unverifiable to the individual under watch. More so, individuals become constantly ‘exposed’ to be managed and evaluated for the purposes of any institution that utilizes UAVs. The introduction of UAVs as a method to surveil in urban environments may create a scenario in which constant ‘exposure’ becomes the norm and everyone’s actions are visible to anyone watching the recordings of the UAVs.

**Bargaining**

Pallitto (2013) argues for an alternative framework – a bargaining paradigm – to articulate what happens when an individual encounters surveillance technologies. By engaging in ideological critique paradigms, we can examine how individuals construct meaning that further creates or sustains power relations. ‘Bargaining’ shifts the focus from the systematic domination of social groups to individually situated subjects while also ascribing agency to individuals rather than depicting them as merely helpless victims of larger forces. Pallitto’s (2013: 11-13) bargaining framework compromises five questions that must be considered: (1) Who is proposing the bargain? (2) What is the balance of power? (3) What is surrendered? What is gained? (4) Are they getting what they think they are getting? and (5) What are the blind spots to their decision making?

Bargaining as a frame for these inquiries works in two ways. First, it helps us to see how individuals make choices to engage with technologies. We can see how they calculate gains and losses and we can avoid ascribing to them a set of interests or needs. In addition to this element of
individual agency and efficacy, we can also see instances where any sort of bargaining is absent, due to actual lacks in mutuality, disclosure, or roughly equal bargaining power. Pallitto (2013: 8) argues that a functional link between belief-formation and social conditions must be shown – that is, the link must explain how those social conditions are reproduced. By asking what the balance of power is, we can often discover that no meaningful choice exists, and what looks like a bargain is actually a situation where an individual concludes there is no alternative.

‘Bargaining’ suggests a common and familiar mode of interaction in which social actors pursue self-beneficial ends through calculation and sometimes persuasion. By viewing certain choices and experiences as forms of bargaining, we gain a stronger understanding of how subjects are situated as those experiences confront them. We see more clearly how their life-chances are affected and gain insights into subjects’ self-understanding. The term ‘trade off’ is integral to bargaining and is seen in trading liberty for security, even though losses in liberty can be greater than they appear, and the gains in security are often illusory. Therefore, it is worthwhile to employ the concept of bargaining as a descriptive device: to reconstruct the bargains involved, and thereby to grasp the actual gains and losses experienced by social actors who navigate a life-world pervaded by surveillance (Pallitto 2013: 5).

This frame sheds light on subjective, context-specific understanding and motivations for action, and it helps to show that often there is no bargaining relationship. Just as it seems counter-intuitive to bargain with a machine, it will often become apparent that individuals are engaged in transacting with a vastly more powerful, diffuse, and impersonal ‘partner,’ and that this relationship precludes meaningful bargaining. Palitto (2013: 6) suggests that the term ‘machine’ refers to the complex and interpersonal technological processes that surpass the intentions of the individual actors who deploy and try to control them. This framework has implications for UAV
operations as individuals cannot make meaningful bargains with the operator and must act to what they believe is reasonable when confronted with the technology. The bargaining framework brings clarity and insight into the decision to engage, accept, tolerate, or reject surveillance systems. Social norms will bear on the individual’s bargaining decisions – both in the content of those decisions and in how the bargainer feels about them. Going against collective judgements and expectations can be difficult, and even traumatic, which is why people surrender control in exchange for convenience and/or to facilitate lifestyle.

**Risk and Affect**

Modern society is often characterized as being both future and safety-oriented, which brings attention to notions of risk (Giddens and Pierson, 1998: 209). Giddens (1998) and Beck (1992) both describe how modern society organized itself in responses to risk. Giddens (1998) coined the phrase ‘risk society,’ and Beck (1992), when discussing modernity, describes it as “a systematic way of dealing with hazards and insecurities induced and introduced by modernization itself” (Beck 1992:21). Both authors’ contributions are important when individuals discuss potential novel events; a risk framework is often and expected to be incorporated projects and events as a way to reduce insecurities.

With regards to UAVs, ‘risk perception’ is defined as: “the processing of physical signals and/or information about potential hazards and risks associated with a technology and the formation of a judgement about seriousness, likelihood, and acceptability of this technology” (Clothier et. al., 2015: 1168). This perception is constructed off seven influencing factors of public acceptance of technology; benefit, knowledge, control, voluntariness, fear/dread, newness, and consequences (Clothier et al., 2015). The higher the perception of benefits, the more knowledge about, and the more control an individual perceives coming from the new technology, the lower
the risk (Clothier et al., 2015). The more instances of involuntary exposure, the higher levels of fear, how novel it is, and the higher the likely the magnitude of consequences towards the new technology, the higher the risk perception (Clothier et al., 2015).

The concept of “affect” becomes central in understanding the reasoning for an individual’s behavior and perception towards a specific object. Best described as a ‘faint whisper of emotion,’ affect can be defined as an “experienced state of feeling that happens rapidly and automatically - with or without consciousness - that deems a situation as positive or negative” (Slovic et. al., 2004: 312; Slovic and Peters, 2006: 322). It is generated out of images, associations, and past experiences that have been marked with positive or negative feelings and is utilized as a heuristic (Slovic et al., 2004: 312). This ‘affect heuristic’ are the feelings that become salient in a judgement or decision-making process, depending on the characteristics of an individual, the task, and the interaction between them (Slovic et al., 2004: 314). It has also been found that emotions such as fear and anger can amplify the estimation of risk and constrict the deliberation process of a risk assessment (Slovic and Peters, 2006).

Affect also takes on social and political dimensions. It is not purely and solely an individual occurrence, it emerges in situations of encounters and interactions between bodies and objects (Seyfert, 2012). These encounters are experiences of political relations and help to describe the formation of reactions (Massumi, 2015). Furthermore, affects range and differ depending on the material threshold that they are translated across (Ash, 2015). To affect and to be affected is based on and results from the social and political contexts of a situation.

Overall, it can be reasoned that UAVs may enact a variety of affectual responses upon individuals depending on the risk that is perceived by that individual and the specific action the UAV is performing. For example, a UAV that is grounded would give off a different affectual
response than a UAV that is in operation. In addition, an individual’s own affect heuristic may influence how they perceive and feel about UAVs due to the images and associations they have previously made about them, unless challenged by its presence through exposure. Finally, the political and social relations individuals have constructed around UAVs may shape how they interact and react to the technology, and form informative encounters with this technology and the groups that use them.
CHAPTER THREE: METHODOLOGY

The purpose of this chapter is to explain and justify the specific methods that were chosen for this research thesis. This chapter will discuss the theoretical frameworks that have influenced the methodological approach, the selected methods chosen, the procedure, the demographics collected, and how the data was analyzed. The overall methodological design was an intervention explanatory sequential model, which placed a novel stimulus within a natural environment, recorded the results between the experimental and the control group, and explained the data gathered through a qualitative lens. Therefore, a quasi-experimental method was undertaken, in which a word association task was used to collect data from respondents from both groups, which was then followed up by semi-structured interviews among a sub-sample of the respondents for further insight.

Intervention Explanatory Sequential Model

The methodology chosen for this research project is an intervention explanatory sequential model. The purpose of the intervention explanatory sequential model is to study a problem by conducting an experiment through the introduction of a novel stimulus to an environment and adding qualitative data to it (Creswell, 2015: 43). The chosen methodology was inspired by the works of the following two sets of researchers: Koskela (2003) and Ball (2009) because they examined the effects of surveillance technologies as they pervade spaces and impact individuals. Additionally, this methodology has been influenced by Timan and Oudshoom (2012) with their intervention method on mobile cameras among Dutch citizens. This method allowed these previous researchers to understand how individuals understood this technology, how it made them feel, and how they acted towards the technology in response.
Therefore, since the object of study in this research thesis is the response individuals have towards UAVs, the best suitable method was to test out this technology in the environment it was intended to be in. However, the purpose of this methodology was to extend the basic intervention model by adding the explanatory sequential component of in-depth qualitative interviews, so as to better understand how individuals view UAVs.

More specifically, the intervention component consisted of an experimental design with two groups: the experimental group and the control group. Individuals in the experimental group were exposed to the UAV intervention, while individuals in the control group were not exposed. The UAV served as the independent variable, since its introduction was manipulated, and individual reaction, collected via word association described below, was the dependent variable. This experimental design was chosen as experimental methods can better identify causal links on what influences human behaviors (Bryman, Bell, and Teevan, 2012: 32). Once both conditions were completed, the data collected was compared to see if any differences occurred between groups. Due to the nature of UAVs being predominantly flown and seen outside, a quasi-experimental approach was undertaken through the introduction of a UAV within a natural setting. The quasi-experimental approach is important to consider as it cannot randomly assign individuals to either the experimental or control condition, thereby reducing internal validity (Nueman and Robson, 2009: 196). However, this sort of approach yields high external validity and is more generalizable as participants can act naturally in their environment, compared to a controlled laboratory setting (Nueman and Robson, 2009: 200).

The explanatory sequential component of this model consisted of adding qualitative data once the experiment was finished to better understand what the quantitative results found (Creswell, 2015: 38). This method also highlights the ability of qualitative data to explain the
nuance that quantitative data often overlooks. The strength of this methodological design is that the two phases build upon each other in that they are distinct and easily recognizable, as depicted in Figure 1. However, the challenges lie in determining which quantitative data needs further explanation with qualitative analysis (Creswell, 2015: 38).

Procedure

This research project was carried out in two steps and involved hiring an entrepreneur photographer who was qualified and sanctioned by Transport Canada. Jeff Reitzel and his assistant from SkEyeStream operated the UAV and maintained that it within a safe distance from participants during the experiment. The UAV model was a white DJI Phantom and was selected as it is the most popular brand of commercial UAV on the market (Air Drone Craze, 2016). As previously stated, this research project incorporated a quasi-experimental design through intervention and so both steps described below were replicated according to their respected groups: the experimental condition received the introduction of the UAV as the novel stimulus, while the control did not; both groups were questioned and a subset of each of the groups participated in the semi-structured interviews.

The first step of the research thesis involved operating the UAV in three different locations at three different times. This difference in location and time was replicated for the control group. This was done to eliminate selection bias so that similar participants could not form in the same locations among the same times (Charmaz, 2014: 226). Once the UAV was up in the sky, individuals who entered within the parameters of the experiment were approached. They were told the nature of the study, my affiliation with the University, and asked if they wished to participate in the study. Those that agreed to participate were given a word association task: they were told to state the first three words that came to their mind when they looked at the UAV in the sky.
Participants in the control group were asked for the first three words that came to their mind when they heard the word “drone” as it is the most commonly referred to phrase for UAVs (Clothey et al., 2015). Once completed, the participants were then asked if they would like to further participate by completing a semi-structured interview at a later date.

The second step of the research thesis involved having participants from both the experimental and the control groups complete an interview lasting approximately 30 minutes regarding the topic of UAVs being used in urban areas. Participants were generally interviewed within one day to a week since initial contact. Sixteen semi-structured interviews were conducted, eight from each group, and the participants answered a total of nineteen questions. Each question was open-ended enough for the participant to delve into what they believed the most important information about UAVs was, and to discuss why they felt a certain way towards them. For more information please refer to appendix A.

**Figure 1: Methodological Model of the Intervention Explanatory Sequential Design**
**Word Association**

The word association task is known to be a quick, efficient, and simple qualitative method that is used in both Psychology and Sociology (Green, 1984; Ares, Gimenez, and Deliza, 2010). It is assumed that by providing a stimulus to respondents and asking them to indicate the first thoughts that come to mind may reveal the mental associations they have tied to that stimulus. The information gathered from the word association task is useful to uncovering the attributes individuals associated with the stimulus, what the individual finds to be most important about the stimulus, and how they may behave towards the stimulus as a result (Ajzen and Fishbein, 1980; Guerrero, 2000; Roininen, Arvola, and Lahteenmaki, 2006). Examples of this method are most commonly used in consumer research, as the words that come to mind may drive consumers’ product choices and decisions (Piqueras-Fiszman et al., 2013). Additionally, Benthin and colleagues (1995) found word associations to be a useful method for eliciting positive and negative affects associated with the behavior of adolescents. It is also ideal to ask for more than just one word, preferably three, as requiring multiple responses better captures the richness of an individual’s association network (Schmitt, 1998). Speaking to the benefits of this method, due to its quick and simple design, more respondents can be surveyed, which makes the results more generalizable. An often-stated weakness of this model is that the results provided can be shallow and difficult to interpret (Roininen, Arvola, and Lahteenmaki, 2006). Therefore, semi-structured interviews are included in this research thesis as a follow-up measure to bring interpretation to these results. This allows for greater validity to the findings through the triangulation of methods (Bryman, Bell, and Teevan, 2012: 281). This method was chosen for this research thesis as UAVs have begun to become commodified within the domestic realm and the results from this method can shed light into how individuals may behave and react to these flying platforms.
Semi-Structured Interviews

Semi-structured interviews are known to focus on substantive areas of an individual’s perception regarding a certain topic (Simon, 2006). The questions presented to the participant are open-ended enough for them to interpret and make sense of the topic being discussed, while maintaining central to the purpose of the research project (Bryman, Bell, and Teevan, 2012: 166). This method was chosen for this research thesis as it allows for an in-depth exploration of an individual’s perspective, meaning, and experience towards a specific topic (Charmaz, 2014: 56). Additionally, a better understanding can be found towards an individual’s emotions, behaviors, views, and beliefs regarding that topic (Bryman, Bell, and Teevan, 2012: 171). Finally, this method was selected as previous research on perception regarding UAVs has failed to incorporate a substantive qualitative component by only relying on quantitative data (Eyerman et al., 2013; Bracken-Roche et al., 2014; Clothier et al., 2015). It is noted that interviews have the limitation of measuring individual subjectivity for the purpose of authenticity regarding a certain topic (Charmaz, 2014: 80). However, this limitation does not impede this research thesis as this study is aimed to explore how individuals construct their associations with UAVs and what influences them. Therefore, it is argued that a better understanding of the nuisances surrounding this topic can be attained through this qualitative method, filling in the gaps that exist within the literature and influence future projects.

Sampling Strategy

The sampling strategy of this intervention explanatory sequential model relied on a non-probability convenient sampling strategy (Bryman, Bell, and Teevan, 2012: 219). This is because the project relied on a deception technique amongst those within the vicinity of the study. Potential participants needed to be unaware that a UAV may or may not be operated within their area as to
not affect their response to the intervention. Therefore, the UAV introduction cannot be randomly assigned to participants because participants do not necessarily have a random chance to be assigned to the control or experimental group. Essentially this does imply that some characteristics of the population are more likely to be selected than others. In addition, specific groups from the population cannot be measured since the study relies on individuals who traverse these selected locations.

Individuals were assigned to their groups based on which days the UAV was operating in those selected locations. Therefore, some individuals fell under the experimental group because the UAV was flying that day, compared to those individuals who were placed in the control group when the UAV was not in operation. The experimental condition was performed first as a way to not alert and prime any potential participants of the UAVs presence in the following control condition. If the same individuals from the experimental condition also happened to be in that area during the control condition, they were excluded as a way to avoid overlap of participants and skewing of results.

There was no specific target population of interest, since the operation of UAVs in populated areas applies to all members within that location. However, throughout the field experiment, the majority of respondents surveyed and interviewed happened to be University students. Although there was a small percentage of those who did not fit this category, the results of this research project are best suited at describing the views of young, University adults.

**Demographics**

Demographics were recorded throughout the experiment, illustrated in Table 1. In total, 80 participants were asked to perform the word association task: 40 for control and 40 for experimental, 30 of which were males and 50 being females. There were 14 males in the control
condition and 16 in the experimental condition, while there were 26 females in the control condition and 24 in the experimental condition. Within each sample, a subsample of 16 participants, 8 from each of the experimental and control groups, was taken for semi-structured interviews concerning their opinions and attitudes and perceptions towards UAVs, shown in Table 2. Consistency among demographics for the interview component was strived for, ultimately relying on participant willingness to be interviewed.

**Table 1: Demographics Collected**

<table>
<thead>
<tr>
<th>Age Cohorts</th>
<th>Total (n=)</th>
<th>Control (n=)</th>
<th>Experimental (n=)</th>
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<tbody>
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<td>31 – 35</td>
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Table 1. Demographic information of all participants collected, separated by control and experimental conditions.
<table>
<thead>
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<th>Total (n=)</th>
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<th>Experimental (n=)</th>
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<td><strong>Age</strong></td>
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<td></td>
</tr>
<tr>
<td>18 – 24</td>
<td>11</td>
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<tr>
<td>25 – 30</td>
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<td>31 – 35</td>
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<td>36 – 40</td>
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<td>41 – 45</td>
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<td>0</td>
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<td>46 – 50</td>
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<td>51 – 55</td>
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<td>56 – 60</td>
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<td>60+</td>
<td>3</td>
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<td>2</td>
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<td><strong>Age Cohorts</strong></td>
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<td></td>
</tr>
<tr>
<td>Young (18 – 35)</td>
<td>12</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Middle-Age (36 – 55)</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Old-Age (55+)</td>
<td>4</td>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>

**Table 2.** Demographic Information of sub-sample of participants who participated in a semi-structured interview, including group identifiers (control or experimental).
Data Analysis

The word association data was analyzed according to relevant themes that the words shared. An open coding process was chosen as this analysis examines, compares, conceptualizes, and categorizes the data (Bryman, Bell, and Teevan, 2012: 259; Charmaz, 2014: 124-125). From this analysis, 12 different themes surrounding UAVs emerged. Words were coded based on the following themes: descriptors (physical attributes), military applications, technology, feelings of annoyance, photography, feelings of unease, aviation, tools, surveillance, hobby, social activities, and positive admirations. From this list, the following themes were selected for comparisons between groups and genders as they were relevant to the research questions being asked: surveillance, military applications, and positive admirations. Statistical analysis via the Statistical package for the Social Sciences (SPSS), 24th edition, with an alpha value set to 0.05, was conducted using a Chi-Square analysis to test for differences between groups and genders among these categories. Differences were further explored through analysis of the semi-structured interviews.

The semi-structured interviews were thematically coded and analyzed based on previous literature and relevant theoretical frameworks. This took on a focused coding approach as it is able to help direct what themes are most useful and then to compare it to previous data (Bryman, Bell, and Teevan, 2012: 259; Charmaz, 2014: 139). Questions were segmented along following topics of interest either discussed in previous research or theoretical frameworks that had been highlighted among surveillance literature. Questions 1 to 5 examined where individuals had first head about UAVs and what their initial feelings of them were. These initial questions were exploratory. Questions 6 to 8 examined the attitudes individuals had towards specific groups operating UAVs in urban areas. These questions were influenced by previous literature (Eyerman et al., 2013; Bracken-Roche et al., 2014). Questions 9 to 11 explored the potential concerns and benefits individuals may envision with the presence of UAVs, which were again influenced by
previous works on the subject (Slovic and Peters 2006; Clothier et al., 2015). Questions 12 to 15 examined the surveillance associations individuals had about UAVs, this was chosen to be explored due to the results indicating a significant number of respondents feeling it to be relevant. These questions were analyzed based on the works of Ball (2009) and Koskela (2003), alongside with previous literature that has examined the area. Finally, questions 16 to 18 further explored the aspects of the technology that participants liked or disliked. For more information, please see appendix A.
CHAPTER FOUR: RESULTS

Step One: Word Association Task

The findings of the word association task accumulated a total of 198 words across a total of 80 participants. Participants were asked to think of the first 3 words that came to mind when they heard the word “drone” or saw the UAV for the control and experimental groups respectively. Ideally, there would be a total of 240 words, however, some participants could only think of one or two words to describe drones. This left out a total of 42 words unaccounted for, but still provides for 83% of the sample taken. The findings are presented in tables 3, 4, and 5 to highlight the differences between the control and experimental group as well as the overall themes that emerged from the word-association task.

The word-association task was thematically coded along 12 prominent themes that emerged throughout the data analysis process. They were: military applications, surveillance, feelings of unease, feelings of annoyance, physical descriptors, aviation, photography, hobby/toy, social activities/platforms, tools, and technology. Overall between experimental (n=40) and control (n=40) it was found that physical descriptors (35), photography (26), aviation (25), surveillance (18), military applications (17) and technology (17) were the most brought up themes (Table 3). The top words chosen by participants across all groups and genders were: flying (20), military (9), cool (9), privacy (8), drone (8), and camera (8). Having descriptors, photography, and aviation as the top three themes selected by all participants is not surprising as literature has shown that when participants are asked to perform a word association task they generally indicate one to two neutral words before assigning themes that are attached with emotion towards the stimulus (Petchkovsky et al., 2013). Following a focused coding approach based on previous literature, surveillance and military applications were selected to be examined and analyzed between groups and genders, as well as a more in-depth exploration into how these themes are tied to UAVs within
the semi-structured interviews. Tables 6, 7 and 10 show that surveillance was both considered to be associated with UAVs for both genders.

Table 8 demonstrates that significance was found when testing to see differences in words chosen relating to military applications comparing the experimental and control conditions. It was found that the control condition was more likely to choose words relating to the military applications of UAVs compared to the participants in the experimental condition ($X^2 = 9.253$).

Table 9 illustrates that significance was found when testing to see differences in words chosen relating to positive admirations about UAVs between both conditions. It was found that the experimental conditions were more likely to choose words relating to positive admirations of UAVs when compared to the control condition ($X^2 = 16.538$).

While table 10 indicates that there were no significant differences between males and females in relating UAVs towards surveillance ($X^2 = 0.356$). From the initial findings, it appears that both genders associate surveillance with UAVs and while this does appear true, the qualitative component of this research project reveals the nuance into the different reasoning of why between males and females.
**Table 3: Overall Themes among Both Conditions**

<table>
<thead>
<tr>
<th>Key Themes</th>
<th># of Words (% of Total)</th>
<th>Key Themes</th>
<th># of Words (% of Total)</th>
<th>Key Themes</th>
<th># of Words (% of Total)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Descriptors</strong></td>
<td>35 (17.7%)</td>
<td><strong>Photography</strong></td>
<td>26 (13.1%)</td>
<td><strong>Surveillance</strong>*</td>
<td>18 (9.1%)</td>
</tr>
<tr>
<td>White</td>
<td>3</td>
<td>Picture</td>
<td>7</td>
<td>Privacy</td>
<td>8</td>
</tr>
<tr>
<td>Silver</td>
<td>1</td>
<td>Camera</td>
<td>8</td>
<td>Spying</td>
<td>3</td>
</tr>
<tr>
<td>Drone</td>
<td>8</td>
<td>Photo</td>
<td>0</td>
<td>Watching</td>
<td>1</td>
</tr>
<tr>
<td>Fast</td>
<td>2</td>
<td>Filming</td>
<td>2</td>
<td>Surveillance</td>
<td>4</td>
</tr>
<tr>
<td>Thing</td>
<td>7</td>
<td>Recording</td>
<td>0</td>
<td>Invasive</td>
<td>2</td>
</tr>
<tr>
<td>Dark</td>
<td>1</td>
<td>Video</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Helicopter</strong></td>
<td>4</td>
<td><strong>View</strong></td>
<td>0</td>
<td><strong>Hobby/Toy</strong></td>
<td>9</td>
</tr>
<tr>
<td>Small</td>
<td>5</td>
<td><strong>Perspective</strong></td>
<td>1</td>
<td>Recreation</td>
<td>3</td>
</tr>
<tr>
<td>Shape</td>
<td>1</td>
<td><strong>Photography</strong></td>
<td>6</td>
<td>Toy</td>
<td>4</td>
</tr>
<tr>
<td>Plane</td>
<td>3</td>
<td></td>
<td></td>
<td>Fun</td>
<td>2</td>
</tr>
<tr>
<td><strong>Military</strong></td>
<td><strong>17 (8.6%)</strong></td>
<td><strong>Feelings of Unease</strong></td>
<td>14 (7.1%)</td>
<td><strong>Social Activities/Platforms</strong></td>
<td>7 (3.5%)</td>
</tr>
<tr>
<td>Military</td>
<td>9</td>
<td>Creepy</td>
<td>3</td>
<td><strong>YouTube</strong></td>
<td>1</td>
</tr>
<tr>
<td>Bomb</td>
<td>2</td>
<td>Dangerous</td>
<td>2</td>
<td><strong>Concerts</strong></td>
<td>1</td>
</tr>
<tr>
<td>Obama</td>
<td>1</td>
<td>Safety</td>
<td>1</td>
<td>Music</td>
<td>1</td>
</tr>
<tr>
<td><strong>Call of Duty</strong></td>
<td>2</td>
<td>Apprehension</td>
<td>2</td>
<td>Drone Hunting/Racing</td>
<td>2</td>
</tr>
<tr>
<td>Weapons</td>
<td>1</td>
<td>Crash</td>
<td>3</td>
<td><strong>Commercial</strong></td>
<td>1</td>
</tr>
<tr>
<td>Middle East</td>
<td>2</td>
<td>Alien</td>
<td>3</td>
<td>Sports</td>
<td>1</td>
</tr>
<tr>
<td><strong>Technology</strong></td>
<td><strong>17 (8.6%)</strong></td>
<td><strong>Aviation</strong></td>
<td>25 (12.6%)</td>
<td><strong>Positive Admiration</strong>*</td>
<td>20 (10.1%)</td>
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<td>Flying</td>
<td>20</td>
<td>Cool</td>
<td>9</td>
</tr>
<tr>
<td>Technology</td>
<td>7</td>
<td>Far</td>
<td>1</td>
<td>Unique</td>
<td>1</td>
</tr>
<tr>
<td>Electronic</td>
<td>1</td>
<td>Above</td>
<td>2</td>
<td>Interesting</td>
<td>6</td>
</tr>
<tr>
<td>Machine</td>
<td>1</td>
<td>Sky</td>
<td>2</td>
<td>Useful</td>
<td>2</td>
</tr>
<tr>
<td>Futuristic</td>
<td>3</td>
<td></td>
<td></td>
<td>Powerful</td>
<td>1</td>
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<tr>
<td>Advanced</td>
<td>1</td>
<td></td>
<td></td>
<td>Innovative</td>
<td>1</td>
</tr>
<tr>
<td><strong>Feelings of Annoyance</strong></td>
<td><strong>5 (2.5%)</strong></td>
<td><strong>Tools</strong></td>
<td>5 (2.5%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Noisy</td>
<td>3</td>
<td>Different Things</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Annoying</td>
<td>2</td>
<td>Research</td>
<td>1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 3 illustrates the number of words used according to themes during the word-association task from both conditions; the stars* represents themes that were explored in the Chi-Square analysis.
<table>
<thead>
<tr>
<th>Key Themes</th>
<th># of Words (%) of Total</th>
<th>Key Themes</th>
<th># of Words (%) of Total</th>
<th>Key Themes</th>
<th># of Words (%) of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Descriptors</td>
<td>19 (20.4%)</td>
<td>Photography</td>
<td>10 (10.8%)</td>
<td>Surveillance</td>
<td>8 (8.6%)</td>
</tr>
<tr>
<td>White</td>
<td>3</td>
<td>Picture</td>
<td>3</td>
<td>Privacy</td>
<td>6</td>
</tr>
<tr>
<td>Silver</td>
<td>0</td>
<td>Camera</td>
<td>2</td>
<td>Spying</td>
<td>0</td>
</tr>
<tr>
<td>Drone</td>
<td>6</td>
<td>Photo</td>
<td>0</td>
<td>Watching</td>
<td>0</td>
</tr>
<tr>
<td>Fast</td>
<td>1</td>
<td>Filming</td>
<td>1</td>
<td>Surveillance</td>
<td>1</td>
</tr>
<tr>
<td>Thing</td>
<td>4</td>
<td>Recording</td>
<td>0</td>
<td>Invasive</td>
<td>1</td>
</tr>
<tr>
<td>Dark</td>
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<td></td>
</tr>
<tr>
<td>Helicopter</td>
<td>1</td>
<td>View</td>
<td>0</td>
<td>Hobby/Toy</td>
<td>5 (5.4%)</td>
</tr>
<tr>
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<td>2</td>
<td>Perspective</td>
<td>0</td>
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<td>1</td>
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<tr>
<td>Shape</td>
<td>0</td>
<td>Photography</td>
<td>3</td>
<td>Toy</td>
<td>2</td>
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<tr>
<td>Plane</td>
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</table>

<table>
<thead>
<tr>
<th>Military Applications*</th>
<th>2 (2.2%)</th>
<th>Feelings of Unease</th>
<th>8 (8.6%)</th>
<th>Social Activities/Platforms</th>
<th>4 (4.3%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Military</td>
<td>1</td>
<td>Creepy</td>
<td>1</td>
<td>YouTube</td>
<td>1</td>
</tr>
<tr>
<td>Bomb</td>
<td>0</td>
<td>Dangerous</td>
<td>1</td>
<td>Concerts</td>
<td>1</td>
</tr>
<tr>
<td>Obama</td>
<td>0</td>
<td>Safety</td>
<td>1</td>
<td>Music</td>
<td>1</td>
</tr>
<tr>
<td>Call of Duty</td>
<td>0</td>
<td>Apprehension</td>
<td>1</td>
<td>Drone Hunting/Racing</td>
<td>0</td>
</tr>
<tr>
<td>Weapons</td>
<td>0</td>
<td>Crash</td>
<td>1</td>
<td>Commercial</td>
<td>0</td>
</tr>
<tr>
<td>Middle East</td>
<td>1</td>
<td>Alien</td>
<td>3</td>
<td>Sports</td>
<td>1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Technology</th>
<th>7 (7.5%)</th>
<th>Aviation</th>
<th>9 (9.7%)</th>
<th>Positive Admiration*</th>
<th>18 (19.4%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Robot</td>
<td>0</td>
<td>Flying</td>
<td>6</td>
<td>Cool</td>
<td>7</td>
</tr>
<tr>
<td>Technology</td>
<td>5</td>
<td>Far</td>
<td>1</td>
<td>Unique</td>
<td>1</td>
</tr>
<tr>
<td>Electronic</td>
<td>0</td>
<td>Above</td>
<td>1</td>
<td>Interesting</td>
<td>6</td>
</tr>
<tr>
<td>Machine</td>
<td>0</td>
<td>Sky</td>
<td>1</td>
<td>Useful</td>
<td>2</td>
</tr>
<tr>
<td>Futuristic</td>
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<td></td>
<td></td>
<td>Powerful</td>
<td>1</td>
</tr>
<tr>
<td>Advanced</td>
<td>1</td>
<td></td>
<td></td>
<td>Innovative</td>
<td>1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Feelings of Annoyance</th>
<th>2 (2.2%)</th>
<th>Tools</th>
<th>1 (1.1%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Noisy</td>
<td>2</td>
<td>Different Things</td>
<td>1</td>
</tr>
<tr>
<td>Annoying</td>
<td>0</td>
<td>Research</td>
<td>0</td>
</tr>
</tbody>
</table>

Table 4 Illustrates the number of words used according to themes during the word-association task from the experimental condition; the stars* indicate a difference between military applications and positive admiration.
**Table 5: Themes for Control Condition**

<table>
<thead>
<tr>
<th>Key Themes</th>
<th># of Words (% of Total)</th>
<th>Key Themes</th>
<th># of Words (% of Total)</th>
<th>Key Themes</th>
<th># of Words (% of Total)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Descriptors</strong></td>
<td>16 (15.2%)</td>
<td><strong>Photography</strong></td>
<td>16 (15.2%)</td>
<td><strong>Surveillance</strong></td>
<td>10 (9.5%)</td>
</tr>
<tr>
<td>White</td>
<td>0</td>
<td>Picture</td>
<td>4</td>
<td>Privacy</td>
<td>2</td>
</tr>
<tr>
<td>Silver</td>
<td>1</td>
<td>Camera</td>
<td>6</td>
<td>Spying</td>
<td>3</td>
</tr>
<tr>
<td>Drone</td>
<td>2</td>
<td>Photo</td>
<td>0</td>
<td>Watching</td>
<td>1</td>
</tr>
<tr>
<td>Fast</td>
<td>1</td>
<td>Filming</td>
<td>1</td>
<td>Surveillance</td>
<td>3</td>
</tr>
<tr>
<td>Thing</td>
<td>3</td>
<td>Recording</td>
<td>0</td>
<td>Invasive</td>
<td>1</td>
</tr>
<tr>
<td>Dark</td>
<td>1</td>
<td>Video</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Helicopter</td>
<td>3</td>
<td>View</td>
<td>0</td>
<td>Hobby/Toy</td>
<td>4 (3.8%)</td>
</tr>
<tr>
<td>Small</td>
<td>3</td>
<td>Perspective</td>
<td>1</td>
<td>Recreation</td>
<td>2</td>
</tr>
<tr>
<td>Shape</td>
<td>1</td>
<td>Photography</td>
<td>3</td>
<td>Toy</td>
<td>2</td>
</tr>
<tr>
<td>Plane</td>
<td>1</td>
<td></td>
<td></td>
<td>Fun</td>
<td>0</td>
</tr>
<tr>
<td><strong>Military Applications</strong>*</td>
<td>15 (14.3%)</td>
<td><strong>Feelings of Unease</strong></td>
<td>6 (5.7%)</td>
<td><strong>Social Activities/Platforms</strong></td>
<td>3 (2.9%)</td>
</tr>
<tr>
<td>Military</td>
<td>8</td>
<td>Creepy</td>
<td>2</td>
<td>YouTube</td>
<td>0</td>
</tr>
<tr>
<td>Bomb</td>
<td>2</td>
<td>Dangerous</td>
<td>1</td>
<td>Concerts</td>
<td>0</td>
</tr>
<tr>
<td>Obama</td>
<td>1</td>
<td>Safety</td>
<td>0</td>
<td>Music</td>
<td>0</td>
</tr>
<tr>
<td>Call of Duty</td>
<td>2</td>
<td>Apprehension</td>
<td>1</td>
<td>Drone Hunting/Racing</td>
<td>2</td>
</tr>
<tr>
<td>Weapons</td>
<td>1</td>
<td>Crash</td>
<td>2</td>
<td>Commercial</td>
<td>1</td>
</tr>
<tr>
<td>Middle East</td>
<td>1</td>
<td>Alien</td>
<td>0</td>
<td>Sports</td>
<td>1</td>
</tr>
<tr>
<td><strong>Technology</strong></td>
<td>10 (9.5%)</td>
<td><strong>Aviation</strong></td>
<td>16 (15.2%)</td>
<td><strong>Positive Admiration</strong>*</td>
<td>2 (1.9%)</td>
</tr>
<tr>
<td>Robot</td>
<td>4</td>
<td>Flying</td>
<td>14</td>
<td>Cool</td>
<td>2</td>
</tr>
<tr>
<td>Technology</td>
<td>2</td>
<td>Far</td>
<td>0</td>
<td>Unique</td>
<td>0</td>
</tr>
<tr>
<td>Electronic</td>
<td>1</td>
<td>Above</td>
<td>1</td>
<td>Interesting</td>
<td>0</td>
</tr>
<tr>
<td>Machine</td>
<td>1</td>
<td>Sky</td>
<td>1</td>
<td>Useful</td>
<td>0</td>
</tr>
<tr>
<td>Futuristic</td>
<td>2</td>
<td></td>
<td></td>
<td>Powerful</td>
<td>0</td>
</tr>
<tr>
<td>Advanced</td>
<td>0</td>
<td></td>
<td></td>
<td>Innovative</td>
<td>0</td>
</tr>
<tr>
<td><strong>Feelings of Annoyance</strong></td>
<td>3 (2.9%)</td>
<td><strong>Tools</strong></td>
<td>4 (3.8%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Noisy</td>
<td>1</td>
<td>Different Things</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Annoying</td>
<td>2</td>
<td>Research</td>
<td>1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 5 illustrates the number of words used according to themes during the word-association task from the control condition; the stars* indicate a difference between military applications and positive admirations.
Table 6: MALE THEMES AMONG BOTH CONDITIONS

<table>
<thead>
<tr>
<th>Key Themes</th>
<th># of Words (% of Total)</th>
<th>Key Themes</th>
<th># of Words (% of Total)</th>
<th>Key Themes</th>
<th># of Words (% of Total)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Descriptors</td>
<td>11 (13.9%)</td>
<td>Photography</td>
<td>11 (13.9%)</td>
<td>Surveillance*</td>
<td>6 (7.6%)</td>
</tr>
<tr>
<td>White</td>
<td>1</td>
<td>Picture</td>
<td>1</td>
<td>Privacy</td>
<td>1</td>
</tr>
<tr>
<td>Silver</td>
<td>0</td>
<td>Camera</td>
<td>3</td>
<td>Spying</td>
<td>2</td>
</tr>
<tr>
<td>Drone</td>
<td>6</td>
<td>Photo</td>
<td>1</td>
<td>Watching</td>
<td>0</td>
</tr>
<tr>
<td>Fast</td>
<td>0</td>
<td>Filming</td>
<td>1</td>
<td>Surveillance</td>
<td>3</td>
</tr>
<tr>
<td>Thing</td>
<td>3</td>
<td>Recording</td>
<td>0</td>
<td>Invasive</td>
<td>0</td>
</tr>
<tr>
<td>Dark</td>
<td>0</td>
<td>Video</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Helicopter</td>
<td>0</td>
<td>View</td>
<td>0</td>
<td>Hobby/Toy</td>
<td>6</td>
</tr>
<tr>
<td>Small</td>
<td>0</td>
<td>Perspective</td>
<td>0</td>
<td>Recreation</td>
<td>3</td>
</tr>
<tr>
<td>Shape</td>
<td>0</td>
<td>Photography</td>
<td>3</td>
<td>Toy</td>
<td>1</td>
</tr>
<tr>
<td>Plane</td>
<td>1</td>
<td></td>
<td></td>
<td>Fun</td>
<td>2</td>
</tr>
<tr>
<td>Military Applications</td>
<td>7 (8.9%)</td>
<td>Feelings of Unease</td>
<td>6 (7.6%)</td>
<td>Social Activities/ Platforms</td>
<td>3 (3.8%)</td>
</tr>
<tr>
<td>Military</td>
<td>4</td>
<td>Creepy</td>
<td>0</td>
<td>YouTube</td>
<td>1</td>
</tr>
<tr>
<td>Bomb</td>
<td>0</td>
<td>Dangerous</td>
<td>2</td>
<td>Concerts</td>
<td>0</td>
</tr>
<tr>
<td>Obama</td>
<td>1</td>
<td>Safety</td>
<td>0</td>
<td>Music</td>
<td>0</td>
</tr>
<tr>
<td>Call of Duty</td>
<td>2</td>
<td>Apprehension</td>
<td>0</td>
<td>Drone Hunting/Racing</td>
<td>1</td>
</tr>
<tr>
<td>Weapons</td>
<td>0</td>
<td>Crash</td>
<td>1</td>
<td>Commercial</td>
<td>1</td>
</tr>
<tr>
<td>Middle East</td>
<td>0</td>
<td>Alien</td>
<td>3</td>
<td>Sports</td>
<td>0</td>
</tr>
<tr>
<td>Technology</td>
<td>3 (3.8%)</td>
<td>Aviation</td>
<td>8 (10.1%)</td>
<td>Positive Admiration</td>
<td>12 (15.2%)</td>
</tr>
<tr>
<td>Robot</td>
<td>0</td>
<td>Flying</td>
<td>6</td>
<td>Cool</td>
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</tr>
<tr>
<td>Technology</td>
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<td>Far</td>
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<td>Unique</td>
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<tr>
<td>Electronic</td>
<td>0</td>
<td>Above</td>
<td>2</td>
<td>Interesting</td>
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</tr>
<tr>
<td>Machine</td>
<td>0</td>
<td>Sky</td>
<td>0</td>
<td>Useful</td>
<td>0</td>
</tr>
<tr>
<td>Futuristic</td>
<td>0</td>
<td></td>
<td></td>
<td>Powerful</td>
<td>0</td>
</tr>
<tr>
<td>Advanced</td>
<td>0</td>
<td></td>
<td></td>
<td>Innovative</td>
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</tr>
<tr>
<td>Feelings of Annoyance</td>
<td>2 (2.5%)</td>
<td>Tools</td>
<td>4 (5.1%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Noisy</td>
<td>1</td>
<td>Different Things</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Annoying</td>
<td>1</td>
<td>Research</td>
<td>1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 6 illustrates the number of words used according to themes during the word-association task from the males of both conditions; the stars* indicate differences among surveillance when compared to female participants.
Table 7: Female Themes Among Both Conditions

<table>
<thead>
<tr>
<th>Key Themes</th>
<th># of Words (% of Total)</th>
<th>Key Themes</th>
<th># of Words (% of Total)</th>
<th>Key Themes</th>
<th># of Words (% of Total)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Descriptors</td>
<td>24 (20.2%)</td>
<td>Photography</td>
<td>15 (12.6%)</td>
<td>Surveillance*</td>
<td>12 (10.1%)</td>
</tr>
<tr>
<td>White</td>
<td>2</td>
<td>Picture</td>
<td>5</td>
<td>Privacy</td>
<td>6</td>
</tr>
<tr>
<td>Silver</td>
<td>1</td>
<td>Camera</td>
<td>5</td>
<td>Spying</td>
<td>1</td>
</tr>
<tr>
<td>Drone</td>
<td>2</td>
<td>Photo</td>
<td>0</td>
<td>Watching</td>
<td>1</td>
</tr>
<tr>
<td>Fast</td>
<td>2</td>
<td>Filming</td>
<td>1</td>
<td>Surveillance</td>
<td>2</td>
</tr>
<tr>
<td>Thing</td>
<td>5</td>
<td>Recording</td>
<td>0</td>
<td>Invasive</td>
<td>2</td>
</tr>
<tr>
<td>Dark</td>
<td>1</td>
<td>Video</td>
<td>1</td>
<td>Hobby/Toy</td>
<td>3 (2.5%)</td>
</tr>
<tr>
<td>Helicopter</td>
<td>4</td>
<td>View</td>
<td>0</td>
<td>Recreation</td>
<td>0</td>
</tr>
<tr>
<td>Small</td>
<td>5</td>
<td>Perspective</td>
<td>1</td>
<td>Toy</td>
<td>2</td>
</tr>
<tr>
<td>Shape</td>
<td>0</td>
<td>Photography</td>
<td>2</td>
<td>Fun</td>
<td>1</td>
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<tr>
<td>Plane</td>
<td>2</td>
<td></td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Military Applications</th>
<th>10 (8.4%)</th>
<th>Feelings of Unease</th>
<th>8 (6.7%)</th>
<th>Social Activities/Platforms</th>
<th>4 (3.4%)</th>
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</thead>
<tbody>
<tr>
<td>Military</td>
<td>5</td>
<td>Creepy</td>
<td>3</td>
<td>YouTube</td>
<td>0</td>
</tr>
<tr>
<td>Bomb</td>
<td>2</td>
<td>Dangerous</td>
<td>1</td>
<td>Concerts</td>
<td>1</td>
</tr>
<tr>
<td>Obama</td>
<td>0</td>
<td>Safety</td>
<td>1</td>
<td>Music</td>
<td>1</td>
</tr>
<tr>
<td>Call of Duty</td>
<td>0</td>
<td>Apprehension</td>
<td>1</td>
<td>Drone Hunting/Racing</td>
<td>1</td>
</tr>
<tr>
<td>Weapons</td>
<td>1</td>
<td>Crash</td>
<td>1</td>
<td>Commercial</td>
<td>0</td>
</tr>
<tr>
<td>Middle East</td>
<td>2</td>
<td>Alien</td>
<td>1</td>
<td>Sports</td>
<td>1</td>
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<tr>
<td>Technology</td>
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<td>Aviation</td>
<td>17 (14.3%)</td>
<td>Positive Admiration</td>
<td>8 (6.7%)</td>
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<tr>
<td>Robot</td>
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<td>Cool</td>
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<tr>
<td>Technology</td>
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<td>Far</td>
<td>1</td>
<td>Unique</td>
<td>0</td>
</tr>
<tr>
<td>Electronic</td>
<td>1</td>
<td>Above</td>
<td>1</td>
<td>Interesting</td>
<td>2</td>
</tr>
<tr>
<td>Machine</td>
<td>1</td>
<td>Sky</td>
<td>2</td>
<td>Useful</td>
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<tr>
<td>Futuristic</td>
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<td>Powerful</td>
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<tr>
<td>Advanced</td>
<td>1</td>
<td></td>
<td></td>
<td>Innovative</td>
<td>0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Feelings of Annoyance</th>
<th>3 (2.5%)</th>
<th>Tools</th>
<th>1 (0.8%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Noisy</td>
<td>2</td>
<td>Different Things</td>
<td>1</td>
</tr>
<tr>
<td>Annoying</td>
<td>1</td>
<td>Research</td>
<td>0</td>
</tr>
</tbody>
</table>

Table 7 illustrates the number of words used according to themes during the word-association task from the female participants of both conditions; the stars* indicate differences among surveillance when compared to the male participants.
Table 8: Military Applications: Experimental vs. Control

<table>
<thead>
<tr>
<th>Condition</th>
<th>Military Applications</th>
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<tr>
<td></td>
<td>No</td>
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<td>Total</td>
<td></td>
</tr>
<tr>
<td>Experimental</td>
<td>91</td>
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<td>93</td>
<td></td>
</tr>
<tr>
<td>Control</td>
<td>90</td>
<td>15</td>
<td>105</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>181</td>
<td>17</td>
<td>198</td>
<td></td>
</tr>
</tbody>
</table>

Pearson Chi-Square value = 9.253

Table 8 illustrates that a Pearson Chi-Square analysis was run between both conditions in relation to word choice of military applications of UAVs.

Table 9: Positive Admiration: Experimental vs. Control

<table>
<thead>
<tr>
<th>Condition</th>
<th>Positive Admiration</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No</td>
<td>Yes</td>
<td>Total</td>
<td></td>
</tr>
<tr>
<td>Experimental</td>
<td>75</td>
<td>18</td>
<td>93</td>
<td></td>
</tr>
<tr>
<td>Control</td>
<td>103</td>
<td>2</td>
<td>105</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>178</td>
<td>20</td>
<td>198</td>
<td></td>
</tr>
</tbody>
</table>

Pearson Chi-Square value = 16.538

Table 9 illustrates that a Pearson Chi-Square analysis was run between both conditions in relation to word choice of positive admirations of UAVs.

Table 10: Surveillance: Male vs. Female

<table>
<thead>
<tr>
<th>Gender</th>
<th>Surveillance</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No</td>
<td>Yes</td>
<td>Total</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>73</td>
<td>6</td>
<td>79</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>107</td>
<td>12</td>
<td>119</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>180</td>
<td>18</td>
<td>198</td>
<td></td>
</tr>
</tbody>
</table>

Pearson Chi-Square value = 0.356

Table 10 illustrates that a Pearson Chi-Square analysis was run between genders of both groups in relation to surveillance themes associating to UAVs.
CHAPTER FIVE: FINDINGS

Step Two: Semi-Structured Interviews

The findings of the semi-structured interviews revealed that individuals primarily associate UAVs with surveillance capabilities and practices. Through discussions with participants ranging lasting approximately 30 minutes, 7 key themes were identified of how UAVs brought about surveillance associations. For more information on how each theme was coded, please refer to appendix A. 8 participants were interviewed from both conditions, totaling 16, with their group being indicated with either an E for experimental and a C for control. Interestingly, participants would often employ a risk/reward framework when discussing UAVs as a way to present a balanced view, yet they would often end up focusing on the surveillance issues as it was visceral to them.

Previous Knowledge

As demonstrated in the word association task results, military applications were found to be present more within the control group compared to the experimental group. Additionally, surveillance themes were found across both groups, coupled with other components, such as photography, positive associations, and technology. Throughout the semi-structured interviews, participants were asked “how they first heard about drones,” and were asked to explain their word choice for the word association task. The answers provided illustrate that many participants were informed about UAVs through news coverage and video games and that these were primarily tied to warfare and surveillance. The respondents presented below were mainly from the control group, therefore, highlighting why individuals seem to have a hesitant reaction towards UAV use in open areas, while the participant from the experimental condition speaks to their original perception of the technology and how it may be shifted post-exposure.
B: Do you remember the context when you first heard about drones?

2C---Uh… It was drone strikes. Yeah, like Iraq, or, whatever…it was like, CNN so it was a little bit, you know… Hyped up, um…But yeah, it was, I was younger then. Uh, and yeah, you sort of hear about these like, new technologies or… And people, I think people and like, military were like, getting medals of honors just for like, flying it and yeah, I was like, okay, well, that’s cool.

4C---Well, Obama’s like, known as the drone President. He used them more than any other President, but obviously no other President had them as much as he did. But, um, just, you hear it all over the news that, um, drone strikes in Syria, drone strikes in Middle East, Obama um, ordering these strikes everywhere.

6C--- I had seen and heard in the media of drones being used to target and bomb certain areas and around the Middle East, that they were used for military application. So, that’s the… as soon as you said the word drone, a bomb going off.

3C--- Call of Duty to be honest. Always in Call of Duty there was one of kill streaks that when you get an X amount of kills you get to fly around a drone, and either get to tag people with it, other people around that drone get to see where the person is and it has an attachment of a minigun to it. So, that’s the first time I’ve ever heard of drones, but from there I started to see more research of people flying around drones, with a ghost costume and scaring people with them. Or people having cameras attached to them for sports videos.

4E--- Um, I think it’s actually because I had never quite seen a drone like that before. When you see most of them or you think about them, you think of like the big, scary, black, attack drones, kind of deal. Um, so I think, the fact that it was very different from sort of like the archetypical drone, like when you say drone what people picture in their head is… was not at all like that. So, the fact that it was so different from what I am used to seeing when I hear that word sort of threw me off. So, I really focused on those elements as like “oh, this is a drone, but it’s different from everyone I’ve ever seen before.

What is common amongst the responses of the control participants is how the knowledge of UAVs is already primed based on previous information from another source. They are informed of the uses of this technology through either news stories, and/or video games, with themes of warfare and surveillance which is why there may be a visceral reaction towards their presence. This is illustrated by comparing responses of control participants to that from 4E who when first
witnessed the UAV indicated that it was different from the archetype they envisioned a UAV to be, big, scary, and militarized.

**Surveillance Associations**

One of the main themes to emerge from attitudes and perceptions concerning UAV usage in urban environments was the notion of UAVs being used for surveillance means. Whether this is done by law enforcement agencies, corporations, or strangers, the quotes placed below are used to illustrate that UAVs are commonly associated with surveillance. It was found that seven components made up the surveillance association, each having their own explanations and meaning among participants: exposures of privacy, feelings of unease, chilling/conforming behavior, signifiers of ‘Big Brother,’ mobile cameras, gendered notion of surveillance and operation, and crime control and perception.

The fundamental concern expressed in interviews regarding the issue of surveillance by UAVs was that an individual’s image could be recorded and manipulated for the user’s purpose without the individual’s consent or knowledge. Individuals expressed that the surveillance capabilities of UAVs put them in unease, as they could be watched from an unverified source. The awareness of knowing that UAVs can be used for survivals purposes suggests that it is a concern individuals focus on, and in order to alleviate this concern they must constantly know where the UAV is.

*B: So how do you feel then, knowing someone could be watching you through the drone?*

#4C--- *Vulnerable.*

*B: Why?*

#4C--- *They can see you and you can’t see them. You don’t know where they are, they know where you are.*
Because well, the one that you had wasn't very quiet, but I have a feeling that some can be pretty quiet and as I said, people don't look up and usually people look down at their phones, so people aren't looking up and they can't hear them. So, they're really awesome at watching people from above and it's probably better than a person watching because then you can review the video after. So, it makes sense that it's for surveillance, but it doesn't make me nervous. It's just, I think we are already probably watched, somewhat closely so who cares its fine.

It would depend on what it is being used for. My initial feeling is uncomfortable...If there was a specific purpose being used for it. I agree with that, for general surveillance for who gets the most packages on the street or something along those lines. That's a little creepy.

Surveillance because pretty well they all come with a camera, so when I think of camera, I think of them filming areas. It's great as far as filming fields, filming crops, filming that. But also, it can be used, where someone could take it, fly it into our backyards, fly it up to windows, and basically look see what is going on with people's homes, that's why I feel like as far as surveillance, so it's using the wrong hands, people could use it to benefit themselves. See if anyone is home in the house and you know, they could like break in. Or check what contents is in the house, as far as surveillance or you know, police could use it as well too. Go into areas where they can't reach, to check out certain areas, you know if people hiding in the area or if someone they are looking for is in a certain area on a certain floor they can use it as well. That's why I think of surveillance for drones as well.

I don’t particularly do anything in public that I wouldn’t... that I would be uncomfortable with it being on camera. Um, so I don’t think it would affect my behavior a lot. But I do think that I would be focused on the drone. Sort of, like I don't think I would see it and be like “oh that drone is there” and then just continue with my normal activities. Like I would be sort of checking in once in a while and be like “what is it doing there? What is it... Is it still filming? What is it doing?

The above quotes seem to suggest that if exposed to a UAV that was surveilling them, participants would feel as if they were constantly being judged by something up above, that they could not reach or get fully away from. Furthermore, it is interesting to note that it is not only the UAV that seems to be of concern, but just the notion of the camera that brings in the surveillance aspect. By giving the camera the ability to move, participants seem to voice concerns over usage of UAVs being an unchecked power - something with the capacity to observe that is unknowable.
and unverifiable - which places them in unease. What follows are the seven key themes participants discussed when relating UAV operation to surveillance practices.

**Exposures of Privacy**

When probed as to how individuals would feel knowing that they were being watched by a UAV, respondents would generally indicate that they felt like their privacy had been exposed to an observer. Participants would explain this exposure through physical space, drawing comparisons between public, private, and mental space. Additionally, participants indicated emotional aspects being brought about if they believed a UAV was observing them.

---

#1C--- *For a company or something like that using… It's just… I find it would be more invading on my privacy… 'Cause I don’t know what they would have… What they would… What are they looking for? What are they getting? Without me knowing.*

#8E--- *But I know that other people are possibly gonna be in a compromised situation. They might be in an accident and yeah… let’s say a car accident occurs on a highway and some uh… amateur news videographer decides to get footage of it. I don’t know if that’s necessarily…. *sigh* um, ethically right. Where you’re trying to commercialize someone else’s pain and the best way to get the footage of that pain is through the drone.*

As participants 1C and 8E describe when asked how they would feel if a corporation or anyone else was using UAVs, they replied that they would still feel like it was an invasion of privacy because they are not aware of the purpose of the UAV within their vicinity. In this instance, one’s privacy is tied to one’s personal world and the fear is that a UAV may expose their pain and vulnerabilities in the event of a compromising situation. This promptly led to concern over the use of UAVs since it is open and affordable to everyone, enough for anyone to become amateur videographers.

---

#1C--- *Yes. So, that they can come down from the round mountain, down by the river, yes. So, that, yeah, it's unnerving that how much detail and how close they*
can get to... something. That’s sort of unnerving. Um... I-I don’t know I guess, I guess I’m... I, for me, personally I’m kind of, more of a, pretty private person. Just, people knowing exactly what colour your curtains are *Laughs*, you know, like when they’re surveying your house or something that’s... Yeah. It’s just a, it’s just a private, security... Invading my little bubble.

#3C---Depends on my environment. I would be completely comfortable if someone was watching me in the kitchen, in a training environment. I am running around outside, but if I am in my own home, where I don't want anyone to be watching me. It would be very uncomfortable knowing that there is a drone flying around in my house, seeing what I am doing.

B: Why do you think that is?

#3C---On a privacy basis, when I am at home, I like doing my own thing and like relaxing in a certain way. I don't want to have people seeing me relaxing. I feel more vulnerable when I am home. I don't want people to see that vulnerability

#4E---Um, just that they be using them for sort of violations of privacy, like filming people without their consent and like things that people might not necessarily want on film. And that that differs for every person, like, I’m not a very private person, but I have friends who like if they were on a date with someone in a park, they wouldn’t want that filmed, they wouldn’t want anyone to have that, because they’re very private about their relationship. So, I think the tricky thing with that is that it’s different for everybody, so I think that if you are going to be doing that, you should be talking to each person and saying like what are you comfortable with having on film, and are you comfortable if we are doing this - if not you should leave this area, because this is where we are filming it.

As participant 4E mentions, even though their friends could be in a public area, their private relationship risks exposure, as they have not consented in being filmed for everyone to see. Yet another component, voiced by respondent 3C suggests the differences between private and public space, as when they are in a private space they can be vulnerable and do not wish others to see them as such.

The notion of a participant’s private world being exposed and what this meant for them in terms of privacy was common in responses to the following questions. Participants voiced why UAVs had the potential to bring about feelings of exposure and where they subjectively drew their own lines on privacy and what was meant for the public eye.
No, not really as long as they are not disrupting traffic or messing with powerlines, that would be bad, although I guess they can avoid them. They only thing that would bother me is, because I heard a story where a drone was looking into a window on a high-rise building and I don't go into high rise buildings, so once again this doesn't really concern me very much. But that would not be okay especially if it was a residential place, that's not cool. And people wouldn't have access to that window otherwise, like on a house you would just look in I guess if you were creepy, but um they only way you're going to look in to a high rise is with a drone and that's just not right. But's that’s the only reason I would be bothered by it I guess.

B: I mean like, why do you feel like that it's not right for a drone to do? Fly up to a high rise?

If someone is in a high rise, they are kind of paying for privacy. Maybe they don't think about that, but they are, they have privacy in their homes and I don't know I think you have a right to privacy and the drone kind of disrupts that right. If everyone is on the ground, you can see everybody. You don't expect privacy, but in your own home and the on the 20th floor you do.

Affects the rights the privacy...Obviously because they take away the physical privacy I think. They can't get in your house, but even I heard that, you know Pokemon Go right?

B: Yep

I heard that apparently, they were using Google maps or something to get inside people's houses and you hear stuff like that and is it really stopping at drones? That's another thing. Are they impeding our privacy? Yes, and but are drones okay, they could talk about that. Are they going to stop at drones? Are they going to now try and see inside our houses, you don't really know where the line is here because I think once your break down one barrier, like this, into your private home and your backyard like me. It opens the doorway for another, small chips in our phones, like tracks on our e-mails and one step at a time, it gets worse. But slowly, which is scarier.

B: So, what did you mean by drones taking away the physical sphere?

Physically, because I meant if they tapped our e-mails, that would be some cyber-space sphere of privacy and there is like our intellectual, mental privacy that would be pretty difficult. That would take some interesting science to try and get, but they physically get into our backyards clearly and on our streets and the fact that I noticed mine and they're annoying buzz and notice them. But a lot of people don't have great hearing and you may be talking and you may not even
know it is there, you might not even have the inclination that it is being watched. That's even more wrong.

What the participants seem to be indicating is that UAVs have the capabilities of invading and breaking into the private spheres of an individual’s life, since they cannot be held back by physical barriers. As participant 5C points out, UAVs can easily get into one’s physical property and observe, without the awareness of the individual and views the introduction of UAVs as a further erosion towards privacy rights. This is further reinforced by participant 1E who indicates how UAVs can disrupt those who previously ‘paid for privacy’ by living in high rises, as they can now access these previously undisturbed spaces. A concern that is echoed by both the participants interviewed is the notion of a UAV being above them and out of grasp. However, there are those that seem to accept the nature of ubiquitous surveillance within the public realm, but the real division is when one crosses into the private sphere.

#3C---In public areas no, because in a public area you are always being watched already. There are multiple cameras of you, there are people taking Snapchat's 24/7. You're walking down the street and someone snapchats a friend, they are going to get you in the camera. You could be offended by it, but most times people just brush it off and not care about it. I feel like it would be the same regarding drones.

Maintaining the sacredness of the private sphere versus the public sphere may be explained by the performative aspect individuals internalize as they enter the public eye. Their privacy seems to relate to their behavior due to the awareness of a potential observer. If so, they may feel as if they are being judged and perform to what they believe the proper role to be.

#6E---I think so. I think… uh… I feel like I'm more private if I’m walking by myself on a street then if I’m walking with someone watching me. Same with the drone, cause it’s something watching me, so I wouldn’t feel as I’m in a private setting as much. Or I’d feel like my privacy would be… uh… taken away at that point. I would act differently… I would act like I was being watched rather than act like I was alone.
Chilling/Conforming Behavior

During the semi-structured interviews, participants were asked if they thought the presence of a UAV would alter their behavior in any way. The majority of respondents indicated that it would, and they described how this feeling of being watched affected their sense of self with the need to conform.

#4C --- Like, I don’t know how most people are but I think that I would, if we know we’re being watched we think that someone’s looking at us from afar, we’re gonna check our behaviour. I would respond accordingly.

#7C --- Well obviously it definitely could, well I think that for some people it could, if you know you are being filmed then obviously you are going to make sure that you know everything you do is right, but not only that you might be more secluded and you might leave your curtains closed all the time so a drones is not going to be filming what is in your windows and stuff eh, so I would say a person might be more, stay inside more, because they may be afraid to walk outside they could be filmed, not that what the person did is wrong but who wants to be filmed without their permission, without their consent.

#6E --- I don’t think I’d look at it… I think I would look down, I guess. I don’t know. I would… if I knew a drone was watching, I would definitely act different. Same way if I knew if a person was watching me through my window, I would definitely act differently. Or someone watching me when I was walking, I would try to be more cool or more normal looking. *laughs*

Participants 4C, 7C and 6E felt that if they were aware of being watched this would alter their behavior. They expressed that they would think about what they were currently doing and assess the situation to see if they may be in violation of something and/or remove themselves from being watched. Additionally, participant 6E indicates that they would appear ‘normal looking’ as they have felt a call to conform. From these quotes, it can be assumed that once individuals are aware that they are being watched by a surveillance system they start to engage in performative behavior that corresponds with conformist attitudes. This can be seen from participant 4C and 6E in indicating that they would “act accordingly” and “try to be more cool or more normal looking.” They realize that there are already established patterns of acceptable behavior and falling under
surveillance would encourage adoption of these scripts as to not raise suspicion. However, it is interesting to note that some respondents, like 7C, would reject this need to perform if they became aware of being under surveillance. Instead, they would choose to withdraw to a private place.

#6C--- I think with anything, so with any camera being pointed towards you, its human nature to fix yourself, conform to what you think looks good on camera or would be approved of. So um I can't give an example because in that specific instance I felt comfortable with who I was but um..... yeah.

#5C--- Yeah, I have nothing to hide and yet everyone knows when you are being watched you acted differently when you are sitting at your desk, or on the computer watching Netflix you are just hanging out and being fine. But when you are started to be watched you start to behave differently or even, some people act more guilty than they are because it is so uncomfortable to feel like you're being watched that you become shifty or you feel like you being to withdraw things and it makes me feel guilty having done nothing and I feel like I'm being sneakier and that I have to hide something, even though I have nothing to hide. It's almost as if it is making you a criminal or making me feel something that I'm not just because if they are watching me, why are they watching me, did I do something? Will I do something? I don't know. But now they are making me think of every single thing that I am doing which is I feel like how a criminal would feel or if you were guilty of taking another cookie and then mom asks you and you are like oh my gosh. So, I just feel like it gives that terrible feeling to have that.

#3C--- For sure, yeah, because you are purposely going to act out differently because you know people are watching you. So, you are not going to be yourself if you know someone is always watching you, you're trying to have that person's impression of you, of who you are. Like you don't', there are thing you won't do by yourself if you know someone is watching you. If the drone was watching me, 100% I wouldn't want to have any flags toss up on me because of my behaviors. I just won’t commit any crimes at home. Like no drinking, anything little thing that they could possible think of, to flag you’re for. I'd avoid.

Individuals act in conforming ways when they are under surveillance due to their perceived notions of what they believe the operator deems acceptable. As shown by participants 6C and 3C they discuss acting in ways that would remove any suspicion around them, all the while trying to internalize the feelings of anxiety within themselves. Altogether, these participants seem to
indicate that conforming effects under surveillance are influenced by perceived group influence and what one believes to be acceptable behavior within that environment.

**Feelings of Unease**

UAVs are used for the what operator intends their purpose to be. The participants are fully aware of this and often see the UAV as someone’s influence and power over them. Throughout the semi-structured interviews, respondents would often indicate that they felt uncomfortable knowing that an unknown UAV was around them because they were unsure of what the intentions were of the operator. They would often believe that the operator had malicious intentions first before recognizing that perhaps those thoughts were unfounded.

#4E---*It just seems kind of creepy. It seems kind of like someone peeping in your windows... I guess it’s different cause it’s a public space, and like there’s always the chance that’s going to happen. I just don’t like the idea.*

#6E---*I don't think it's the drone itself that makes me uncomfortable, it's the photos being taken by someone I don't know to be used for purposes that I don't know and don't have control over. I think it ultimately comes down to a control issue. That I don't like not having control over... where photos of me are going.*

As participants 4E and 6E illustrate, the concept of UAV surveillance seems to indicate a loss of control by the individual. Participants seem to feel as if UAVs challenge their agency in allowing themselves to be removed from their sight. Additionally, respondents were aware that UAVs have the ability to film and record making them concerned about their visual information being used without their consent. Additionally, participants tended to discuss feelings of unease when thinking about UAVs, because they found it may become difficult for them to escape their view. To the participants, UAVs seem to represent their fear towards strangers and the unknown, as well as the loss that can come without adequate protection.
#7C---That I wouldn't like at all, not that I have a lot of things to hide- I don't have anything to hide, but again it's a privacy issues and just like, how would I feel, if I opened my window and saw someone in my backyard, it's almost the same thing with a drone. If someone is flying around a drone with a camera and there could be filming everything of what I have in my backyard and they could use that information to later break into my house, break into my shed, steal merchandise and so I almost compare it to someone being a stranger in my backyard.

#3C---Because you don't know what their whole intentions with the drone would be. You don't know if they are trying to spy on you, you don't know... They could be doing something good with it, who knows, but most of the time, it's reasonable. I saw with Pokemon Go, that someone was flying around a drone trying to catch Pokemon. I would be okay with that, you would just have the GPS sensor moving around on it. But when it comes to it having cameras on it, if its, they trying to find out information, they are digging, they shouldn't dig without consent.

#1C---Yeah... Yeah. Don't really like that idea. Not that I do anything wrong but, um, um, well it's the same thing whether it's a drone or if it's, you know, somebody on the street, like it's that same... that same safety thing. So, whether it's a drone watching you from above or it's somebody a block behind you that's... Following you while you're walking... That's that same feeling I have. Um... A-a security thing. Yeah. Like, like why is that person watching me? Why is that person following me? Is that person going to, you know steal my purse? Is that person seeing where I live?

Participants 7C, 3C, and 1C all discuss their mistrust of an individual using a UAV for the imagined purpose of harming them. These feelings of distrust seem to arise out of the anxiety and need for security that being exposed to surveillance brings, and this leads to the fear of theft of their physical or informational property. The feelings of unease reported by respondents seem to indicate an imbalance in power that they have perceived concerning the UAV, as they cannot fight back and therefore feel helpless to its scope.

Signifiers of ‘Big Brother’

‘Big Brother’ and Nineteen Eighty-Four seemed to signal what participants viewed UAVs as, when questioned. Participants would often voice feelings of Nineteen Eighty-Four and ‘Big Brother’ with regards to UAVs, their usage and their association to privacy claims.
Yes, see, that’s really scary, right? Because, like, the whole, going... I always tie this too, I’m not sure why, I... I think it might be books, I don’t know, big brother is terrifying, oh, no, it’s 1984, I believe? Um... Uh, and then you just see it... I guess you also see it in pop culture, that the government is sort of painted in a bad light, and then the companies sort of always, are sort of like, entrepreneurial thing. The government’s literally shutting them down, like... Although I believe it’s like that at times, um, but yeah, I do think... ‘Cause you don’t know, like, you do care about these secret agencies, like, NSA, sort of thing and it’s... FBI and sort of thing and they have like a database and they know everything about you... So like, if they could just like, you know, have a drone follow you like for, I don’t know, yeah, that’s terrifying. It’s scary, like, it kinda infringes on you just being yourself, like, 24/7, like, if you have to think constantly, geez like, if I go into this building, like, what might they think? Or like, if they see me talking to X person or, or whatever, um, I think that could definitely be problematic. ‘Cause it, like it could always, like I feel like it would always come back to haunt you. Especially in this day and age where everything is recorded, it’s sort of there as soon as you sort of say it or whatever. It’s gonna come back whenever you don’t want it to come back. And in a different context. And sort of a... You see it in politics now and sort of thing...

Actually, I think that’s a really hard question because I think it could be so many things. I don’t know enough about them. It could be, I kind of think in my head from 1984. The ‘Big Brother,’ it could represent something like that. But as a politics student, I don’t think Justin Trudeau is ‘Big Brother’ and I don’t think they are coming to get us it’s not that extreme in my brain. But the concept, they took it really far in 1984 to show how bad it could get and there are beginning forms of that, that can still be uncomfortable and immoral and just disgusting as an authority figure that is supposed to be governing our civility, our structures and institutions and making sure things go smoothly and that we are developing and that our economy is in place. They have a lot of roles and I just think that when the roles start to kind of taper into our personal lives in a way in which they feel like they need to get drones, like I don't know if that is supposed to be a crime stopping. Like are they supposed to be trying to catch us doing something? Like either way, I think that it is exceeding their jurisdictions, so I don't know if that really defines what they mean to me. But kind of a lesser or beginning thing to do with Big Brother and then overstepping their boundaries.

Uhh... I wanted to say 1984ish but um a little bit not anxious or anything, but this is strange. I don't even own a cell phone, so when I see, when I saw that. I thought we are advancing here, or regressing, I don't know. Things are changing fairly rapidly.

Nineteen Eighty-Four is used as a popular indicator in popular culture when describing surveillance (Lyon, 2007). As Lyon (2007) points out, the term often gives the impression of a
dystopic visual of surveillance which has gone too far, typically mixed with totalitarian control and oppression. From the comments provided above, it does not seem to suggest that participants believe that the emergence of UAVs in urban areas would fully indicate this. However, if placed in the wrong hand of an authoritative presence and given unchecked powers, this fear could come to exist. It appears as if UAVs may not be the ultimate tool of surveillance by the state, but could be an indicator of the surveillance state becoming visceral through visibility. As participant 2E explains, the sense of advancing or regressing too quickly brings about concern, and the concept of Nineteen Eighty-Four is used as a reference point to understand that concern.

#5E---I don’t know. Like you hear from the United States, where people are like police have a lot... too much technology or too much kind of... they’re almost like the military these days, almost like they’re weaponized. Kind of like of like that ‘Big Brother’ thing, I would really I don’t know something like if it just was a random person flying a drone I wouldn’t mind it, but if it was an apparatus of the States I wouldn’t be as into it, because it’s like my privacy or something... I don’t know... and who knows what they’re using it for. I don’t know... it’s tough... I’ve never really thought about it, I guess.

#7E---Probably, mixed feelings, because like it brings the whole thing, big brother, yeah so, it’s also like so yeah they could be using it as long as they are using it ethically, and I think if they had to like if they had to follow specific procedures, as well as, when I think of the government in control of these I think of the privacy thing, is that it's at its pinnacle moment, right because you know it's like the imbalance of power right? I don't know, I read 1984 in grade 11.

Accordingly, participants 5E and 7E connect the novel Nineteen Eighty-Four to the rapid growth and expansion of paramilitary policing. To these respondents, UAVs represent ‘Big Brother’ because they may feel as though there is too much social control being exerted over them through the use of state regulated UAVs. Additionally, with surveillance being a ‘hot topic’, anything related to its use has the ability to evoke a fantasy of a dystopic society.
Mobile Cameras

Due to the visual surveillance capabilities UAVs possess, participants discussed why they thought UAVs were more of an issue than CCTV cameras. Respondents indicated that CCTV cameras were normalized and that there are signs indicating that participants would be watched. UAVs, however, can utilize power through their mobility which may cause anxiety among participants.

#1C---Um… Well, I think drones can capture more information. ‘Cause they're on the move. Um, and I never think of those other cameras. I never think of those and when you… Those are like the ones that… Like, the traffic lights… Oh. I never think of those.

B: Why then, can I ask why?

#1C---I-I, you know, when you said that I’d never… I thought: “Oh yeah, there are cameras there”. I, no…I never even thought of those. I feel like I should be watching them *Laughs*. When I go into those banks but… Yeah, no, I-I honestly never even thought of those. Huh. Hm, yeah, so I’m being watched more than I thought. *Laughs*.

#2E---I've never experience CCTV cameras as far as I know of, maybe they are up here. But I would say there pretty much birds of a feather right. There just, they're there all the time detecting whatever is going on, because I suppose, I presume at some point that these will just be up in the air all the time. I supposed the satellites are doing the same thing *Laughs*. Though not at the same, though they can get pretty high definition eh? Resolution is the word, high resolution.

The responses above seemed to indicate that participants are aware of CCTVs within an individual’s vicinity, and respondents seem to take them for granted. These responses seem to reference how CCTV surveillance system have been normalized within society, such that individuals do not register their presence anymore (Norris and Armstrong, 1998; Murakami-Wood and Webster, 2009; Lippert and Wilkinson, 2010). This could be partly explained by a privileged notion of surveillance systems, in that these participants do not need to worry about being subjected to surveillance systems and how their imagery may be used due to their white middle-class identity.
#7C---The big difference is that CCTV cameras are stationary, so usually you find them in public areas or buildings and actually again there are signs posted there that CCTV cameras are present and filming and stuff say. A drone is not stationary and are flying over the areas and basically are in areas where you think a camera wouldn't be present at all. So again, like a field, someone's backyard, that is the big thing with privacy, people not knowing that a drone could be 200ft up in the air filming down on you and you would never know. A CCTV camera, where is a CCTV camera? There are signs posted saying that cameras are there and that you will be filmed. So, the big difference with drones, is that drones are high up and most of the time you might never know that you are being filmed, which I believe is against privacy.

However, as participant 7C argues, CCTVs have signs that indicate to the individuals of their presence, while UAVs do not. This places the individual in a place of precarity, feeling as though their privacy has been violated. Without any rules or regulations governing their use, respondents seem to feel as though UAVs are a ‘wild technology.’

#1E---CCTV cameras are stationary, um so they're typically pointed at a place that needs security so maybe like an ATM or a door. I don't know I'm guessing doors are maybe watched, they watch things that are of interest to the person watching. Drones can watch everything because they move and that's the only difference I can think of, I guess they have more power in what they watch.

B: Okay, how can you say they have more power in what they watch?

#1E---I'm guessing it was at least an 180 swivel, and it can move around a bit. CCTV, maybe can move a bit too, but not nearly as much because this can also turn, so this has 3d, like a half circle dome underneath. I'm not describing it very well, but it can see everything, right? And although I don't know why it would want to see anything that isn't high security or high risk. Like a door or an atm. I'm doubting the whole door thing, but some of them are watched, maybe.

CCTV cameras tend to be placed where individuals assign value that needs to be protected. This rationale seems to allow individuals to accept their presence (Norris and Armstrong, 1998). However, as this participant indicates, UAVs can be utilized in areas that are not necessarily placed for value protection. As this participant indicates, UAVs have more power in viewing an area as they are not bound physically or rationally to where they are placed. CCTV cameras work on a
logic in determining the best location for their view with an ample justification as to why they are placed (Norris and Armstrong, 1998). The fears concerning UAV usage seems to be that they are not wholly limited by these same rules. Being able to cover an entire area grants the operator more power and ‘grey zones’ in how they operate, compared to CCTV cameras that have these rules placed in their design.

#6E--- I guess, would those, if they were there, you can… once you leave them, you’re out of their sight, they can’t really, they couldn’t follow you. They’re immobile. They’re stuck on there, their wall. They can turn I guess…

B: Right.

#6E---Once I’m in my apartment, I know there’s probably not a camera or a camera or like on a tree or something. A drone, if it wanted to, it could follow me my whole way and I couldn’t really do anything about it. It can go out of its way. I couldn’t you know walk around the corner… like it’s if it’s a camera on the wall.

#8E---Um….no one’s going to place a CCTV camera right outside your window.

B: Right. Okay.

#8E---Whereas, anyone could grab their drone, prop it outside your apartment which is 8 floors up.

B: Yep.

#8E---So I think that the mobility of drones is what changes the situation.

B: So how like how do drones change the situation?

#8E---Um… because you know that the CCTV at the very most is going to be able to pan… you know that once you leave the CCTV’s field of view, you don’t have to worry about it. It’s gone. You don’t have to worry about it. But then, if a drone is there, it could pan and then it could move and so now it’s not a matter of it’s going to be in your area, you know it’s presently viewing you and then it’s not going to. It’s the moment if it starts to the moment you leave its field of view, if the controller wishes, they can keep following you. And so now it’s you have to… not be aware or be worried but you’re always kind of… yeah you’re always aware that that camera on the drone is capable of getting every single movement from a multitude of angles. Um… and I think it’s uh… it could be pretty compromising for people knowing that I don’t know their limp or something that maybe they’re not that proud of is going to be able to be recorded at any angle… any case. Yeah, it’s uh… yeah the mobility of them brings um… rather than
having to build or install thousands of cameras on you know city blocks, I think London…

B: Right okay. Yeah.

#8E---…is the most heavily surveilled. You could easily have you know instead of those thousands of CCTVs out to track that one person to figure out where they’re going, you could just have one drone.

B: Yeah.

#8E---So I think it’s… the capability of a drone to replace hundreds of CCTVs uh… when you’re trying to follow someone or you’re trying to surveil, yeah.

Lastly, as participants 6E and 8E point out, the ability of a visual surveillance system to follow them places them in states of unease. This is further addressed with the knowledge participants have of CCTV systems as they can pan about but never escape the individual’s view, unlike UAVs. To respondents, a key difference in the surveilling practices of UAVs compared to CCTVs is the lack of challenge they can impose on the system. For CCTV systems, participants are aware of its presence, know its capabilities, and act accordingly to its presence, compared to UAV systems which can hide its presence, capabilities, and protocol.

Gendered Notions of Surveillance and Operation

It was found throughout the semi-structured interviews that female respondents indicated more gendered notions of being under surveillance compared to the male respondents. These findings also provide support for answering the research question regarding the perception of the operation of UAVs in urban areas with different populations. It should be noted that there were a couple of male participants that did indicate how they thought females would feel under the presence of a UAV. Furthermore, multiple participants indicated that they felt as if the UAV was observing for a ‘sexual desire’ and was targeting children. Even before the emergence of UAVs, surveillance is deeply rooted in inequality and can often unsettle individuals.
Actually I didn't really know what they were at first, I saw one I think, I'm not sure. I think some people have things that look like drones and I know people have toy things that have cameras and they look very similar and they don’t know the difference and it was last summer and I was in my back yard and it was flying around the backyards and I was like what is that? But then I thought one of the neighbor kids were using them, but I kept seeing them all around and I was telling a funny story to my Frisbee team when we’re getting some beers and they were like oh my god those were drone and they were watching you and they had a very negative image of it and that really freaked me out, like oh this is just annoying like some kids, but it wasn't like a helicopter. I assumed it was probably a drone but I don't have a lot of knowledge of it, but it was kind of like my first interaction with it. It was kinda we are being watched. This is something I thought was more innocent than it was.

B: So at the time you saw it flying, how did you feel?

Well I was tanning, so I felt really uncomfortable, really uncomfortable and kinda mad and freaked out.

Yeah, so annoying that was actually because the one drone, he... I mean it, it came back a lot that summer. Yeah it came around a few times in a week and then I just didn’t want to go outside. So watching I meant, was just like I felt so watched I didn’t want to go outside, I stopped tanning because it freaked me out. I don't know who controls this, or if it has a video camera I can’t tell, all I know is that it is hovering and it is around my house and I personally, if I want to dance in my backyard or sing, or tan or do whatever, I kind of want to do that without having that feeling, it made me so uncomfortable. It changed my behavior a little bit because I don’t feel comfortable with that. If I saw it, I would just run inside, or maybe I would think that I would just hang out inside instead. Or study inside, because I was studying for my LSATs. And then annoying was just because the third aspects, which is the least of the aspects, because they buzz kind of and its really annoying and I was studying sometimes and if it was watching my mind would get to that place and if that didn't get me to leave, it’s the buzzing is driving me crazy.

This story from participant 5C was the response to the first question posed of how the participant had heard about UAVs. As the participant recounted their experience, it was surprising to hear that the perception of the UAV being used for more nefarious purposes was brought up by the participant’s friend group. This indicates that it was common knowledge that individuals were using UAVs to fly around their neighborhoods to potentially spy on females tanning. This seems
to suggest that the presence of UAVs may extend the ‘male gaze’ onto neighborhoods and private locations, such as backyards. Allowing feelings of uncomfortableness, agitation, and paranoia, and in this event, the participant was afraid of venturing into their backyard in case the UAV showed up again as there was no way to tell where it was coming from and for what purpose.

#6C---Again it would depend on what the recreational purposes were. If it was being used for taking photos of scenery in the area and I happened to be in that area and that was probably likely what that individual was doing. No issues. I'm kind of ambivalent to it but if it’s being used for I don't know, taking a photo of all of the scantily clad women on the beach or something like that, that's uncomfortable. I would be uncomfortable by that.

This was reiterated by participant 6C when asked how they would feel if a stranger was using a UAV. The participant expressed that UAVs may be used for photography, but also perhaps for taking images of females. This further reinforces the feelings of being objectified and the feelings of being uncomfortable that UAVs bring. What was surprising to find throughout this theme was the use of gendered language on UAVs and the operators. For as the first case illustrates and so will the next example, was that the participants who saw UAVs being used for perverted means often attribute the UAV as male and believed the operator to be male, as well.

#1E---They are usually watching me, well maybe not me specifically, but everybody is looking at everybody. Somebody is still looking at me if they are from a drone or on the ground, it doesn't make a difference. I mean it's a little bit weird because they are anonymous I guess, but everybody, until you get to know somebody everybody is anonymous, so who cares? It's the same thing. You just can't see their faces, but their faces don't really matter. I mean, the only thing is, I would... it's going to seem weird but I think that its reasonable if I seem a drone flying, I'm going to assume that it's a guy flying it.

B: Why? Why a guy flying it?

#1E---I don't know of any women who even have much interests in drones let alone own one. I've never spoken to anybody, or talked to anybody and your drone, your operators drone, my uncle's drone, maybe friends who have drones, they are all guys. So I guess it's weird that an unknown male is watching, but as
I said, any stranger on the street is just unknown until you know them, so I don't know it's weird that it's an unknown guy because that's what I would assume, but it's not the end of the world.

Now as participant 5C illustrates the “he…I mean it” for the UAV, thereby reinforcing the case of UAV flying to be a male activity. This is only further reinforced by a male participant 3E, a UAV owner themselves, who brought up what they imagined females would feel if they knew they were being watched by a UAV. Participant 3E also highlights the connection between the masculine use of surveillance technologies for the purpose of gazing upon female bodies.

B: Alright, so, how do you feel knowing someone might be watching you through the drone?

#3E--- Well if I were a girl, I would definitely be more concerned about that.

B: Why?

#3E--- Because it's like *laughs* I’m just kidding....

B: No please, continue

#3E--- Well, you see if flying really close to them and follow them and then you can view and take a picture.

B: Yep, so back to the other thing, you said it might be different for a girl? What did you sort of mean?

#3E--- It's more like, okay let me put it the other way, so let's say you're a professional selling team. You are training, you don't want your competitor or the other people to see, you want to keep it private and the drone just flies to your base and watches and records and everything that happens in your base I mean your harbour and then sends it back and sees how you do and they can change their strategy and catch up and then it's kind of like cheating. I don't know... Uhh for girl it's like, if you see some pretty girl and you really want to follow them, I mean instead of you following them you just use your drone as your eyes in the sky and they just won't notice, they probably will notice but they have no way to...

Finally, the last aspect of gendered notions within the surveillance capabilities of UAVs was the potential concern that this technology would be used by pedophiles to target children. This
discussion came about when participants were asked if they thought UAVs violated privacy and how they felt knowing they were being observed through a UAV. These discussions seem to highlight the fears and anxiety that arise when met with an unknown presence. Participants 1C and 5C both address concern regarding the misuse of UAV photography onto the bodies of those who are vulnerable and talk to the zones of exclusion for UAVs such as parks.

#1C---Yes. I would imagine, ‘cause I don’t know enough about them, but I imagine that a drone is... is collecting data of some sort, not just taking nice pictures. Like, in parks... Now that I’m saying that, it might be a good thing too depending on, uh, who’s doing it... Parks where kids are. You know, whoever’s operating that, if it’s a, I don’t know, a pedophile or something... Um... Yeah... Yeah. Yeah. But I’m trying to think of how to express how, um... Well just being watched... Just being watched... And then not knowing... What that drone is doing. Is it just watching and it’s enjoying a park, for instance. A park, and what’s happening in the park, or is that drone, you know, counting how many people are there, or... How many kids and... How many little girls or how many little boys... Um, yeah, so I would think that would be... An invasion of... Yeah.

#5C---I would feel it’s more, when its unknown it just makes me think it’s kinda pedophiliey. There is nothing good coming from someone operating their own drone, unless because if they are a researcher they need to go through the ethics board. So, they are just kinda creepy or at least you would have to assume that, because you’re are not going to assume the best in that situation.

Crime Control and Crime Perception
Throughout the interviews, participants generally engaged in a discussion revolving around police use of UAVs and how it may influence crime control and crime perception. It was believed that UAVs operated by the police would create a deterrent effect, help catch criminals during or after an offense took place, and would overall help the police with their jobs. The discourse on this topic split between favorable attitudes towards police use and those who were more hesitant, each providing their own rationale for why.

2C---Um... Yeah. But if it could be, like if, if it could help police do their job, then by all means.
Like I said they could probably benefit in crime, if we had drones flying around, if the person stole something like from a bank or jewelry store and then if you had someone running you might seem them on a different street or face view because they are aware or cameras in the store but out on the streets you might be able to get a better view, a license plate or more information. I don’t really know, but it could probably help with crime a little bit.

I’m not a criminal, so it wouldn’t really affect me other than make me feel a bit safer, but I think if a criminal was trying to steal a bike on campus and if a drone flew by. I think maybe they would think twice about stealing that bike.

Well the police have to stop crimes and if they see the crimes happening...Well they might not be able to see them from the ground, maybe they can see them from up above and... but I don’t it just seems like a police kinda of thing to do. Like sitting in a car and holding a speed gun, same idea.

Participants also mentioned that UAVs would influence their crime perception of a certain area. Respondents discussed a paradoxical relationship with UAV technology by the police in terms of crime perception. If a police UAV was in their area, participants mentioned that it made them feel safe and protected since they knew that their area was crime free. However, if they saw a police UAV in another area, participants would indicate that this made them feel like that area is dangerous and that they should leave.

Depends on where I was. So, if I was home I would feel in like, my neighborhood. I would feel, uh, how do I describe it... If I wasn’t in my neighborhood and I saw one, it was for that, I would feel concerned and want to get out of that neighborhood. Whereas if I was at home, I would see it more as, even just, checking our neighborhood, you know what I mean? Like... Like, if I was downtown, or in another neighborhood and I saw it, I would think “Oh, this is a bad neighborhood” and they’re looking for something and... That’s happening right away. But if I see it in my neighborhood, I think it’s because I know my neighborhood. And I know it’s a safe neighborhood. So, they’re just, you know, checking and doing a, like, you know, a random... Check of the neighborhood. Rather than... Looking for someone in particular. But if I was in another neighborhood... I would... I would run. I’m out of there.

Um, especially if I knew it was being used by the police. I’d be like – why is our police surveying this park. I don’t want to be in this park anymore. Not because I don’t like trust the police, of course, but if the police feel the need to survey this park, it’s probable not safe. I’d want to leave.
Finally, there were participants who did indicate caution for police UAV involvement as they believed it could lead to systematic surveillance of disenfranchised classes. Participants 2C and 5E both discuss the targeting of specific socioeconomic populations through police surveillance and believe that this technology may lead to abuse.

B: So, what happens if the drone is being used for like, routine patrol a random day and is just flying over neighborhoods?

2C--- I-I-I would hesitate a lot, right? Because you’re really, you’re kinda abusing that sort of...

B: Can I ask why is that hesitant?

2C---Um… Because it depends what they deem as like, dangerous. Would they go into more vulnerable, sort of, socioeconomic spots and sort of just like search them non-stop because they think all the drugs are there. And, you know what I mean? And just violate people’s privacy on like, a constant basis or sort of like… ‘Cause then they would also like, have reasonable grounds to sort of, like if they find something like, they would, it would just be like a non-stop, like a weekly sort of… Like crime or whatever, um… It could definitely be a good tool for like, I dunno, like prisoner escape or whatever, um, but to just patrol and… I think it would just create paranoia, right?

B: Yeah, right. Actually, why do you think it would create paranoia?

2C---Um… Because you have someone constantly watching you, right? Like, it’s constant. It’s like being, uh, constantly watched and you can’t really sort of let your guard down because you might have like, a picture being taken of you and… Or video or recording, whatever. And, it could all sort of come back to haunt you in a way, like if you ever… If you ever put yourself in the spotlight you could, you know, it would just come up, um…

5E--- Because I think there is also a movement to making our city police force a paramilitary force. A lot of them are now kind of you know you see it again, especially in the States. I talk about the States a lot because eventually a lot of what happens in the States drift Northward I'm hoping I'll die before it's really bad. Um You know somebody's, say in the middle of a divorce, you know got a knife and is holding his wife hostage, it's not a good situation, but you know they come with armored vehicles, bullet proof vests and dogs, you know heavy artillery, heavy weapons and stuff. It's just some dude that's messed up, that just needs to be talked down, and you know that's one things that I still see and very happy about in Canada is when you look at American police forces, there whole ethic is control the situation and in Canadian police forces, I still see their whole situation is try and defuse the situation and that's a huge difference in what
happens, living in the States in Washington D.C. I'll tell you a story about how their cops go.

5E--- Because I don't think that you can make good judgements at a distance because then you are patrolling people who are really not up to anything, so I live in a neighborhood that's a little bit iffy. I live right over here and there is an element in it, right? So, every time I go out to rake my lawn or go out to put out my garbage or walk the dog down the street, I'm going to have somebody watching me, because I live in a neighborhood that's not always okay, you know there’s, these people are black, but last year something there was a lot of drugs going on, and the swat team was there fairly regularly, okay? Those people are gone, and I know that there is people who do drugs who are not in good shape and that sort of thing. Um, and I live near two group homes as well, but you know every once and a while they have a little fight in the house because there are a lot of strangers living in a shared house, and the police will come and do the "now there there" and settle them down, doesn’t my street therefore deserve to have constant vigilance by the police?

The rationale behind both participants’ aversion towards routine patrols of police UAVs stems on emotional aspects and police militarization. Participant 2C indicates that the introduction of police patrol UAVs may create paranoia among the populace into chilling/conforming their behavior. While respondent 5E takes issue with the paramilitarization of the police force in indicating that this response by the police seems to further exacerbate the issues between them and the communities they serve. Altogether, visible police use of UAVs may evoke feelings of safety, security, danger, and paranoia. Additionally, it is feared that the use of routine surveillance by law enforcement would primarily focus on those of a lower socioeconomic background and may contribute to issues already faced by the paramilitarization of the police.
CHAPTER SIX: DISCUSSION

This section will discuss the findings and offer conclusions to this research project. Within the discussion, the initial questions posed by this study will be re-addressed and determined if they have been answered satisfactorily. This will be done by utilizing the analysis of the findings on explaining how individuals view the operations of UAVs within urban areas. Next, the results will serve as a guide for determining if the methodology was suitable in considering this topic. Finally, this discussion will conclude with an analysis of what the data may suggest about the theories that were applied to this research project.

This research project set out to understand how individuals would come to view UAV operations within urban areas if exposed. It also set out to understand what forms of visual surveillance are acceptable and unacceptable. Overall, respondents seem to view UAV operation within urban areas through a risk/reward framework, with a primary focus on its surveillance capabilities and its privacy implications. This was found through the following seven themes that emerged relating to surveillance: exposures of privacy, chilling/conforming behavior, feelings of unease, signifiers of ‘Big Brother’, mobile cameras, gendered notions of surveillance and operation, and crime control and perception. Finally, through the word-association task and the semi-structured interviews participants did seem to indicate that previous knowledge played a role in shaping their perception towards UAVs. Altogether, this data does seem to suggest that the introduction of UAV technology into urban areas elicits feelings of unease relating to surveillance concerns and that the visible notion of UAVs operating in private and urban spaces evokes a visceral response.
Experimental Design Findings

The data yielded from the experimental design does support the notion that individuals associate UAV technology with surveillance practices. However, there was variability in responses, as many ranged from photography, physical descriptors, and hobby/toys. As the results show, the experimental group generated more positive associations to UAVs compared to the control group, which generated more military associations. This seems to suggest that there is a ‘mere exposure effect’ among experimental participants. The ‘mere exposure effect’ occurs when a neutral target stimulus that has been made just accessible to an individual’s perception through repeated exposure under similar conditions will yield an enhancement in liking that neutral stimulus (Zajonc, 1968). This explains why there were more positive associations and less military associations with the experimental group than the control group. Is also important to recognize how affect is tied to the ‘mere exposure effect.’ Participants may have used their affectual response in determining if they considered the UAV - either in front of them or imagined - to be positive, neutral, or negative (Clothey et al., 2015; Slovic et al., 2004; Slovic and Peters, 2006). The control group relied on prior associations tied to UAVs, while the experiment group relied on their immediate feelings. Additionally, an individual’s affectual response towards UAVs, manifested within the word association task highlights the political and social reactions towards UAVs (Massumi, 2015). This can be seen with the military applications and surveillance themes that were elicited among respondents in both groups.

The data from this section may suggest that if UAVs are to become more common place, individuals may become accustomed to their presence; however, their use and the setting they are in are contextual to the individual observing them. Clothey and colleagues (2015) have found that the response in attitudes towards this technology has been neutral, but indicated that this was due to a lack of awareness surrounding UAVs. The differences in data may best be explained through
Pallitto’s (2013) ‘bargaining’ framework as individuals view UAVs through a militaristic lens and therefore attribute such terms to them when not exposed. But when the UAV is present it changes the previous information individuals have about them, and thus changes the bargaining dynamic. Instead of envisioning a UAV fitted for warfare, respondents viewed a recreational UAV that was smaller in shape with only a camera attached to it. By removing the danger component participants were more willing to associate positive admirations to UAVs.

**Previous Knowledge**

Further exploration of the quantitative data through a qualitative analysis revealed what previous information participants had relied on when thinking about UAVs. Respondents discussed that their first encounters with hearing about UAVs was either through news coverage of the war in the Middle East or through video game entertainment of military battles. These findings support what was found in the statistical analysis from the control group: that associations of surveillance and warfare had been predominantly tied to UAVs. Additionally, it was interesting to discover how participants from the experimental group expressed astonishment on how they had previously imagined UAVs after their exposure to the recreational UAV. It has been documented that under the conditions of a ‘mere exposure effect’ respondents rely on their affectual response to interpret previous information they have on the subject (Fang, Singh, and Ahluwalia, 2007). This interpretation of previous information explains why participants discussed how they had originally envisioned UAVs and why there were more positive admirations in the experimental condition. If affect is not available, respondents rely on previous recent information they have on the stimulus, which is easy to retrieve, or naïve theories or metacognitions that they have been told (Feldman and Lynch, 1988). Therefore, this led to the conclusion that the control participants who were not exposed to the ‘mere exposure effect’ condition relied heavily on their
previous knowledge on UAVs. Even though differences were observed for military applications and positive admirations between both conditions, the theme of surveillance was prominent among both. This is not surprising as Bracken-Roche and colleagues (2014) found this to be a concern among respondents as they have visual cameras attached to them and have been implicated in privacy concerns in residential areas. Yet, through Pallitto’s (2013) ‘bargaining’ framework, surveillance issues of UAVs may be more of a concern as respondents feel as though they cannot properly bargain with this technology and rely on previous knowledge to do so for them.

**Surveillance Associations**

The primary association participants connected towards UAVs being operated in urban areas was surveillance. This was explained through how they imagined UAVs to make them feel, what technical components they were made of, and what fears they evoked. Respondents focused on the visual camera attached to the device as an apparatus to view surveillance through. This may be due to the aspect of the mobile camera and the ability to record, as it is bounded in relations of power, expertise, and authority, since the camera can change what can be, and is, seen, recorded, discussed and remembered of public and private life (Hand, 2012). Thereby, the thought of knowing that an individual may be an image and therefore subjected to the will of the observer without their knowledge or consent can be a contributing factor to their associations of surveillance. Additionally, CCTV cameras are commonly associated with surveillance practices in popular culture and have become normalized as such (Norris and Armstrong, 1998; Murakami-Wood and Webster, 2009). As Ball (2009) argues, the sense of being ‘exposed’ brings up feelings of safety, vulnerability, and the thrill of being seen. This coincides with the feelings respondents brought up as previous research has also shown respondents had reported feeling uncomfortable and ‘judged’ while being under CCTV (Gill et al., 2007). This can be added to Foucault’s (1977)
metaphor of the panopticon in that the UAV seems to bring up feelings of exposure among
individuals because they feel as if they are being watched by an unverifiable source. Whether it is
an authoritative power source or not seems to be irrelevant to the participants as the UAV’s
presence seems to evoke a sense of discomfort as they feel as though their privacy is being violated.

Exposures in Privacy
The findings suggest that respondents feel that the presence of UAVs within public areas
may contribute to an exposure of privacy that they already face when being within the public eye.
Participants indicated that they feel as though their personal lives could be on display for someone
to profit or gain enjoyment from. Respondents discussed how if they knew a UAV may be in the
vicinity they would feel as though their sense of privacy was removed and that they may have to
continue to act ‘normal’ as to avoid observation. A major concern raised regarding one’s privacy
from UAVs came from the separation of private and public property. Altogether, this theme is best
understood through the lens of Goffman (1959), Ball (2009), and Pallitto (2013). Through
Goffman (1959), an individual’s private space allows them to interact with their ‘backstage’ and
put aside or prepare for other roles. If a UAV were to violate that space, changing a previous
private space to public, an individual may feel the constant need to perform, causing anxiety. This
notion is reinforced with Ball’s (2009) ‘political economy of interiority,’ as individuals may feel
the need to act accordingly to what they believe a model citizen would do in their private space if
being observed. Furthermore, they would feel as if their privacy is on show for everyone else to
watch. This view may have arisen as UAVs are now being use by a variety of institutions that are
associated with technology, media, employment, and consumption which implicitly creates
demand for such imagery (Ball, 2009; Gynnild, 2014). Additionally, UAVs have the potential to
highlight the ‘politics of verticality,’ as argued by Bracken-Roche (2016). The original concept, as
introduced by Weizman (2002), argues that maps cannot express the geopolitical realities of a society, in which those who are placed physically higher than others are seen superior. Bracken-Roche (2016) extends this concept to the introduction of UAV technology in the public realm by arguing that UAVs have the potential to reinforce the notion of superiority by controlling the atmosphere in a way that may manage populations. Finally, as Pallitto (2013) argues, through this hypothetical invasion of private property it can be understood that individuals feel as though a bargain has been broken as they are at the mercy to this technology without any bargaining power to affect the relationship. Through the lens of UAV surveillance, it can be understood that participants maintain a classical liberal individualistic view of privacy, as it is tied predominantly to spatiality and property (Bennett, 2011). Therefore, it is argued that UAV presence in urban areas may generate feelings of anxiety, as visual surveillance itself elicits needs to perform to avoid observation. Furthermore, the violation of one’s private space may serve to exacerbate these feelings of unease as individuals expect their private lives to not be on display.

**Chilling/Conforming Behaviours**

When under visual surveillance, especially from UAVs, participants discussed how they would feel a need to conform in order to avoid judgement. This is supported by previous literature that has examined observer effects on participants (Kendrick, 2013). Research into conformity has found that individuals are strongly influenced by group behavior and even the suggestion of observation can reinforce a group’s influence (Watson et al., 2013). The ‘chilling effects’ of surveillance have well been discussed and theorized, often assuming individuals will self-censor to avoid any perceived consequences (Kendrick, 2013). It has been difficult to empirically analyze this effect by scholars due to the variability of social nature (Kendrick, 2013). Yet, through some recent polling data, it has been assumed that the public has reacted to this illumination and begun
to ‘police’ their own internet behavior (Kendrick, 2013). This self-disciplinary behavior in the threat of an overseer has been discussed by the works of Foucault (1977) leading it reasonable to assume that individuals may imagine the same if they knew a UAV was operating near them. This supports the suggestion that surveillance leads to more of a ‘conforming effect’ than a ‘chilling’ one (Kaminiski, 2015).

These conforming behavioral shifts are best explained through the lens of Goffman (1959), Ball (2009), and Pallitto (2013). Starting with Goffman (1959), individuals who become aware of being observed will alter their behavior to ‘perform’ according to what they believe is an acceptable role. So, applying Goffman’s (1959) theory of ‘performativity’ to surveillance systems it seems to support that if an individual becomes aware of their surveillance they would follow a pre-established pattern of acceptable behavior, otherwise referred to as a ‘script.’ However, some individuals may either reject the notion of following some routine by refusing to conform or may leave the area entirely. This could be because the individual is overcome with stage fright due to the anxiety that surveillance causes leading them to withdraw, as they may feel like they may perform incorrectly resulting in suspicion. This is where Ball’s (2009) notion of the ‘performativity challenge’, building off of Goffman’s work, is important. Ball (2009) notes that space is central in determining behavior as it dictates what is an acceptable action in that space. Depending on where an individual is and being caught under the gaze of surveillance, a form of social control is often placed over them (Ball, 2009). Pallitto’s (2013) ‘bargain’ can be seen through these discussions as participants attempt to ‘bargain’ with the ‘machine’ (UAV). As Pallito (2013) would argue, individuals are engaged in transacting with a vastly more powerful, diffuse, and impersonal ‘partner’ than the ‘machine’, which precludes any sort of meaningful bargain. This transaction seems to be unequal towards the individual under the UAV ‘gaze’, resulting in feelings of
conformity to not raise suspicion. With the knowledge participants have about UAVs, relating to military and surveillance activities, their decision-making process and how they wish to present themselves is stipulated to be influenced.

**Feelings of Unease**

If the UAV was unverifiable to the participants, they indicated that their first thought was that it could be used for spying on them or their property. Ball (2009) indicates this exposure from surveillance technologies can evoke feelings of anxiety and if the purpose is unknown and the source unverifiable, which is characteristic of UAVs, it is reasonable to assume that individuals would initially affectual feel feelings of distrust and unease. Koskela’s (2003) take on visual surveillance systems in postmodern societies is helpful in explaining why individuals have this visceral reaction to UAVs. To Koskela (2003), the changing of space is crucial for the exercise of power, but reciprocally, ‘power also creates a particular kind of space’, whether this is physically or emotionally. Yet in order for power to be effective, and in this instance in order for conforming behavior to occur power must be visible, both for the observer to see the area, but also that the individual is aware of its presence. From this power-space relationship, visual surveillance creates an emotionally charged dualistic relationship both signifying safety and danger of an area (Koskela, 2003). This is why, and as the data suggests, individuals feel conflicted when being under surveillance; they feel guilty for no particular reason, embarrassed, uneasy, shameful, irritated, secure, and safe. This either allows for the perception of the individuals towards visible surveillance systems to be one of acceptance and empowerment or resistance. Therefore, in the context of UAVs individuals may be less likely to tolerate and accept their presence in urban areas, as they bring elements of unpredictability, uncontrollability, and unverifiability. This further exacerbates the emotional conflicts individuals go through when becoming aware of visual
surveillance systems on them. There is a lack of any meaningful bargain from the respondents as indicated by their distrust and uneasiness. They lack information about what is going on and advocate rejection of the object (Pallitto, 2013). It can be understood that participants situate themselves in an experience where they fear that they have something to lose. This may be part of a popular cultural reference that UAVs seem to have been associated with.

**Signifiers of Big Brother**

The term ‘Big Brother’ was often used throughout the semi-structured interviews when participants were asked what they thought UAVs represented. This was not surprising as themes surrounding surveillance in the word association task were found to be common in both conditions. Additionally, participants in the semi-structured interviews discussed that their first knowledge about UAVs was in a wartime context, usually involving surveillance and/or combat missions. As Lyon (2007) points out, that when individual’s think of surveillance systems, they generally use George Orwell’s novel *Nineteen Eighty-Four* as their measuring rod. Through this perspective, individuals view a sense of a dystopic visual of surveillance systems gone too far, mixed with totalitarian control and oppression, yet on the other side may engage in debate supporting the need for surveillance as a necessity (Lyon, 2007). Pallitto’s (2013) framework is quite relevant in this section as it can bring understanding to how individuals articulate encounters and imagined encounters with state surveillance technologies. In these instances, participants weigh their knowledge with what they have learned through school and popular culture, as interpretations for UAVs. Following Pallitto’s (2013) bargaining framework, participants seem to feel as if they are losing more of their liberties than what they may potentially receive in convenience and security with their indications of ‘Big Brother’ and *Nineteen Eighty-Four*. Salter (2014) and Wall (2016) have pointed out that UAV use by law enforcement is on the rise and further represents a
militarized police force obsessed with a ‘weapons fetish’. By understanding this, it is reasonable to see how and why individuals would use the term ‘Big Brother’ as they may feel as though they are losing more of their liberties than what they would potentially receive in security. These findings further suggest an emerging threshold between what forms of surveillance are acceptable and what is not. However, it is questioned if this technology would slowly become tolerated as surveillance tools, similar to that of the implementation of CCTV cameras.

Mobile Cameras
The mobility of UAVs as a visual surveillance tool unnerved most respondents when comparing them to CCTV cameras. Participants explained that their aversion towards UAVs was because they broke the traditional rules of CCTV cameras, in which CCTV cameras are stationary, there are signs indicating their presence, and there is usually a security rationale for their implementation (Norris and Armstrong, 1998). This gave the view of UAVs to be a ‘wild technology’ as individuals felt there was no proper rules and regulations in place on their operations. It is argued through Pallitto’s (2013) ‘bargaining’ framework this aversion arises as the UAV-individual interaction lacks mutuality, disclosure and a roughly equal bargaining power dynamic, unlike CCTV cameras. Furthermore, as Shaw (2016) points out that through their mobility UAVs have the ability to extend the boundaries of time and space allowing them to be more expansive. Coupled with Koskela’s (2003) explanation of visuality connotating with power, this allows the operator or the operating body to influence their power through greater visibility over the area that they are observing, thereby inserting more control over the area. Additionally, the awareness of how normative CCTV cameras have become was brought up, which has already been referenced by Norris and Armstrong (1998), Murakami-Wood and Webster (2009), and Lippert and Wilkinson (2010). It is argued that individuals view UAVs as primarily surveillance
systems because they see them along the same lines as CCTV cameras which have become a symbol of surveillance within society. By breaking the rules of CCTV cameras, due to their mobility, individuals feel as though their privacy is at more risk for exposure and removes more of their bargaining power. This, in turn, affects their self-concept leading them to believe that they must be ready at all times to present to a conforming attitude in case they are ever observed. Therefore, it is suggested that if acceptable rules and regulations are implemented and if UAVs become more common place in urban areas, they may follow a similar trajectory as CCTV cameras.

**Gendered Notions of Surveillance and Operation**

Though just like CCTV cameras, UAV perceptions and their operations suffer from gendered uses and views. These findings suggest that as well as an unacceptance of this technology being used for surveillance, but that those of differing genders (males compared to females) are affected differently by its presence. The majority of female respondents discussed concerns of being viewed through a UAV by a ‘pervert’ and felt as though they were being viewed for their physical appearance. These results are not surprising as females are often subjected to the ‘male gaze’ through their bodies and behaviors (Brown, 1998; Lippert and Wilkinson, 2010). This is further supported by how a female participant mentioned that she believed most UAV operators are male, which coincides with surveillance literature correlating with masculinity themes of power, control, and dominance (Salter, 2013; Dubrofsky and Magnet, 2015). Additionally, the use of a UAV to view others for pleasure and curiosity as an object that can be constantly watched is scopophilic (Freud, 1920; Mulvey, 1999). As one male participant indicates that they could imagine how females would feel if they were aware of being viewed by a UAV for it can follow
them and take pictures, echoes Mulvey’s (1999) discussion that film places women “to-be-looked-at-ness.”

Male participants seem to experience a ‘privileged notion of surveillance’ through UAVs as they are either predominately the operators or do not need to worry about being objectified through UAVs. According to Ball (2009), these findings seem to indicate that feelings of exposure are interpreted differently across different groups of people. Such that females may interpret exposure relating more to their bodies than males. Pallitto’s (2013) ‘bargaining’ framework highlights the unequal power relations or the lack of any bargaining dynamics placed upon the female body from the male perspective. Just the appearance of the object hovering over their backyard while they are relaxing seems to take away the individual’s agency and enforces an unequal power relation among them, motivating them to stay inside. This is further added among the other participants who feel as if the operator is misusing the UAV to view the powerless and vulnerable, such as children. However, it is curious to note that there were some male participants who were aware of the ‘blind spots’ of the relationships between UAVs and those exposed to them. One participant was aware and empathized with how females would feel to a UAVs presence, suggesting that even for males the visualization of a UAV is seen to spy on female bodies.

**Crime Control and Crime Perception**

Crime control strategies and surveillance have long been associated together and has been found to impact public perceptions on crime (Norris and Armstrong, 1998; Lippert and Wilkinson, 2010). The findings of this research project further illustrate how when individuals think of surveillance systems they often see its impact on crime control. Most participants were accepting of police use of UAVs, but were hesitant if they used it for routine surveillance and flew over someone’s property. For the most part, the data seems to coincide with Bracken-Roche’s (2014)
survey of individuals promoting acceptance of police use of UAVs. From the participants’ responses, individuals seem to take the applications of UAVs by police as an effective way of combatting crime. Additionally, it was noted that some individuals felt as though the police could primarily use the technology to monitor the disenfranchised and lower socioeconomic populations. This has already been pointed out by previous CCTV literature in that operators systematically focus on those they believe to be potential offenders due to existing stereotypes of class and race (Norris and Armstrong, 1998; Lippert and Wilkinson, 2010). It was also found that respondents viewed police use of UAVs to be an aspect of the further paramilitarization of the police force and may exacerbate issues between them and the communities they serve. As previously identified by Salter (2014), UAV technology by the police is another addition to the militarization of police forces to better secure spaces and populations.

This also relates to how this technology furthers the masculine ‘weapons fetish’ of control and domination of the state (Salter, 2014). Wall (2016) extends this viewpoint into explaining how the militarization of police forces often affects minority populations disproportionally and as drones have advanced within the theatres of war, they are now making the transition to domestic use and must be seriously challenged when being deployed to observe protest. This system of moving warfare technology into the domestic sphere for policing is furthered by the capitalistic model to privatize and secure common spaces (Shaw, 2016). Shaw (2016) argues that with UAV technology, the atmosphere needs to be examined as the new enclosure that serves capitalist interests, for enclosure refers to the privatization and securing of common spaces by territorializing new social and spatial relations into the landscape. Combined with Wall’s (2013) earlier work that dronified landscapes generate both opportunities and discontents for the state, it is still seen as the police pursuit for mastering the atmosphere.
What was surprising from this topic was the discussion of how UAVs have the ability to influence crime perception of an area. This suggests that they follow the same perceptual patterns in crime perception from CCTV cameras (Norris and Armstrong, 1998; Schneier, 2003; Gill et al., 2007 Lippert and Wilkinson, 2010). This indicates that in the mind of the individual, CCTV and UAV technologies are one and the same due to the common attachment UAVs have: cameras. What can come out of this discussion is the awareness that UAVs may be argued through a security dialogue, representing what Schneier (2003) calls to be ‘security theatre.’ UAVs may seem to make us safe but in reality they just further cause anxiety if used by law enforcement agencies for frequent routine surveillance. These findings further illustrate Ball’s (2009) and Pallitto’s (2013) frameworks as the exposure to these law enforcement surveillance systems may evoke feelings of safety, security, insecurity, and anxiety. This may be due to the unequal power relations between individuals and law enforcement agencies. UAVs within their repertoire reduces the barging dynamic an individual may perceive and may feel at the mercy to this device. However, it should be noted that this perceptual bargaining framework is different among all groups of individuals as gender, ethnicity, age, and class is able to affect how and individuals perceives the presence of a police UAV. For a white upper-middle class female may see a police UAV with a sense of safety and security, yet a black lower-class male may look onto the police UAV with distrust and anxiety.

**Design Strategy**

The findings of this research project demonstrate the utility of the intervention explanatory sequential design model. The introduction of the UAV as a novel stimulus into an open urban area did produce noticeable differences between groups for the word association task, especially in terms of detecting a ‘mere exposure’ effect. However, it did suffer from some limitations in terms of a small sample size, allowing any sort of age differences to be undetectable. Additionally, the
predominant sample population were University students from the local South Eastern Ontario area and is therefore hardly generalizable to the rest of the Canadian population. Finally, the overall results of the intervention design are hardly significant as prior associations of UAVs from warfare is well documented already (McDougal, 2013; Salter, 2013; Frederik, 2014) and thus adds to pre-existing literature. This research may be used as a way to look back as UAVs continue to transition into the public sphere. Even though the experimental quantitative collection yielded little results, it was in the explanatory sequential design where nuisances and important findings arose. This design revealed the reasons why individuals were predominantly concerned about UAVs being used for surveillance: exposure of privacy, chilling/conforming behavior, feelings of unease, signifiers of ‘Big Brother’, mobile cameras, gendered notions of surveillance and operation, and crime control and crime perception.

Based on the results from the intervention, the qualitative semi-structured interviews were able to locate important distinctions of how individuals perceive the introduction of UAVs in ways that quantitative research cannot (Creswell, 2015: 38). For example, both males and females identified surveillance themes about UAVs when conducting the word association task and were thus not significant in the quantitative component. But, through the semi-structured interviews, it was determined that even though both genders are concerned about the surveillance capabilities of UAVs, they are concerned for different reasons. For women the underlying issue was that the technology would be used to spy on their bodies for sexual purposes, while men were more concerned about it being misused by law enforcement or voyeurs in general. This theme is extremely important to consider as it brings to light the inequality females face in today’s surveilled society while males seem to enjoy a ‘privileged notion of surveillance’ as these concerns do not seem to affect them.
Flying Robots and Visceral Visibilities

Everything considered, it is argued that UAVs have the potential to evoke a sense of ‘surveillance gone too far’ depending on the context in which they are utilized. Considering that the focus of discussion on UAVs centered around privacy and surveillance, it is reasonable to assume this to be the case. However, it should be noted that several individuals were either for the use of UAVs in urban areas or accepted their presence as long as they did not break any laws. To the individuals interviewed, UAVs have the ability to exacerbate the issues visual surveillance systems (in this case CCTV cameras) can cause due to their mobility. Participants discussed the many potential benefits of UAVs and did not advocate for them to be banned but insisted on better regulation practices. Therefore, it is argued that UAV technology into urban areas indicate a shifting in the threshold between acceptable forms of surveillance and what is not. It is speculated that this aversion arises out of the power-space-visuality relationship UAVs hold arising in more expansive forms of visual surveillance causing there to be a more visceral reaction to their presence alongside their novelty and prior associations to warfare.

Limitations

From this study, various limitations can be drawn - most were controlled for while others are justified through the regulations of Transport Canada. Firstly, this research project could have benefited more from a slightly larger sample size within the semi-structured interviews and the word-association task. If approximately 20 participants were interviewed, a stronger validity could be argued among the results, though it can be argued that saturation was found. The word association task could have benefited from a larger sample of individuals if repeatability of the experiment is to be made. Additionally, when conducting the experimental protocol involving the presence of a UAV, this researcher was not blinded to the condition. As a result, due to the lack of
blinding, there may be an inherent internal bias associated with the analysis. Efforts to control this bias was placed in both step one and two of the methodology. Step one was controlled through direct questioning and scripted responses to participants, and step two was controlled through revisions of transcripts for the semi-structured interviews. Secondly, this study could not examine other social variables such as class, ethnicity, and age, as they were either not present or there was not a large enough samples size to generate results from. Thirdly, the majority of respondents were university students and so generalizations and inferences are limited towards these opinions on recreational UAVs. Fourthly, this study is situated in three locations and times, and did not utilize a random sampling strategy. This is due to the fact that Transport Canada makes the decisions on safe flight zones and the times in which one can fly, limiting the ability to randomly sample across times and locations.
CHAPTER SEVEN: CONCLUSION

Overall, the findings of this research project suggest that individuals are influenced by previous knowledge about UAVs in shaping their opinions. The findings also suggest that individuals primarily associate UAVs to surveillance and discussed various concerns as to why. UAVs were tied to surveillance capabilities for their ability to: expose privacy, chill/conform behaviors, promote feelings of unease, signify ‘Big Brother,’ fly around and record, influence gendered notions of surveillance and operation, and influence crime control and perception.

These findings indicate similarities, nuisance, and depth compared to previous literature on perceptions regarding recreational UAVs. Past research has utilized survey analysis in demonstrating major concerns individuals had with UAVs and what group and task they either supported or rejected. Eyerman (2013), Bracken-Roche (2014), and Clotheir (2015), found that the individuals generally had low levels of awareness regarding the use of UAVs in urban areas, but indicated that respondents were interested in learning more. The findings of this research project suggest that the awareness has risen, at least within the Canadian context. This may be due to an increase in participant knowledge, as respondents indicated exposure to UAVs mostly through news stories or video games. Therefore, this current study builds off of previous literature with their preliminary findings of major concerns, further finding verification for their results.

This study also contributes to the knowledge that different populations - in this research project, females - are affected differently by the presence of UAVs, because of the effects of the ‘male gaze,’ and the associations UAV operation has to masculinity. Furthermore, it contributes to a further understanding of why individuals associate this technology with surveillance and how they come to construct meaning and potentially behave towards these surveillance systems through the seven themes that were explored.
The findings of this research project will contribute greatly to the literature that examines UAV use, as well as the various groups and organizations that are involved with UAV operation. Firstly, the findings of this study will contribute to future policies regarding the use of UAVs in urban areas. Policies can be aimed at either minimizing or maximizing UAV use in certain areas, depending on the reaction and the necessity of the technology. These results will also be able to influence future policy on which certain groups may be able to fly UAVs in populated areas compared to others. Additionally, these findings will contribute to the literature of surveillance with relation to UAVs on how individuals behave when they feel like they are under visual surveillance. This research will also contribute to the existing literature on UAV operation by verifying general attitudes on who is using the UAV and for what purpose. Lastly, this research provides a greater understanding in how individuals visualize, theorize, and understand visual surveillance systems, and how these surveillance systems affect them. This research is important to consider as Canadian society may soon face increased UAV implementation and integration of daily life.

Interestingly on April 20, 2017, Transport Canada established additional rules and regulations aimed at deterring reckless recreational UAV operation. This was because the number of UAV recreational related incidents have been steadily increasing as UAVs have continued to grow in popularity (Transport Canada, 2017). The new rules and regulations restrict the use of UAVs that weigh more than 250 grams and up to 35 kilograms from: flying higher than 90 meters, within 75 meters of buildings, vehicles, vessels, animals or people, having the UAV be more than 500 meters away from the user, operation at night, within nine kilometers of any aircraft or location where aircraft take off, without your name, address, and phone number marked on the UAV itself, and over forest fires or places where emergency responders are operating. Individuals who break
these rules and regulations can face fines up to $3000. However, these rules and regulations do not apply to operators of UAVs for commercial, academic, or research purposes as they already fulfill the requirements of a special flight certificate (Transport Canada, 2017). These rules were placed as previously an individual could only be formally penalized if they broke a section of the Criminal Code, such as criminal negligence or mischief with the UAV (Foote, 2017).

Furthermore, the Federal Aviation Association (FAA) was overruled by the United States of American Court of Appeals in requiring UAV pilots to register their craft with the government. Two years prior, the FAA required all UAV pilots; professionals and hobbyists to register, pay a fee and put an identification number on their aircraft, however, the US Court of Appeal found that the FAA had overstepped its authority. The reasoning was that the FAA was in violation of the 2012 FAA Modernization and Reform Act, which states that the agency “may not promulgate any rule or regulation regarding a model aircraft” in applying legislation to recreational UAV operators (Forbes 2017). Interestingly, the Chinese company DJI has announced that they will severely limit the functionality of their UAVs until buyers register their products with the company days after the court’s ruling. Failure to register will limit the height of the UAV to 98 feet, a radius of 164 feet, and a disabled live feed. The change applies internationally and is to “ensure correct geospatial information and flight functions for your aircraft, as determined by your geographical location and user profile,” states the company (O’Kane, 2017).

Considering the findings from this research project concerning the perception of UAV use in urban areas this seems like the right steps forward to take in ensuring safety and privacy of individuals. While this project focused on the surveillance concerns participants brought up, there were several fearful responses in regards to a UAV falling and hitting someone or landing on private property. Although, it does call into question if these new rules and regulations will be
effective in combatting reckless UAV operation. Firstly, deterrence measures are often cited to only be effective if individuals are certain that they will be caught and punished (Paternoster, 1987; Decker and Kohfield, 1990; and Pogarsky, 2002). Considering that the rules ask for the operator to place their name, address, and phone number on the device, many individuals may not do so to avoid fines if they operate improperly. Individuals will change their behavior if they believe that the action they may take to be immoral (Pogarsky 2002), and therefore proper UAV flight education is advised. Secondly, the issue of operator identification is still prevalent as the breakage of any of these rules may happen only for a short time, reducing the chance of anyone noticing the UAV and for any sort of apprehension to occur. Finally, it seems as a further to the ‘security theatre’ Schneier (2003) pointed out, as the new rules and regulations may make individuals feel safer, yet at the same time generate anxiety. Altogether, these new rules and regulations indicate what Shaw (2016) has pointed out, that the atmosphere is becoming an area of enclosure for the privatization and securing of common space. For the legal penalizations now make the activity riskier for individuals to engage in, and make the airspace appear unpredictable and dangerous.

Even with the current overturn by the US Court of Appeal, the decision by DJI has reinforced a need for control over recreational UAV operation. It appears that the company may be making this decision for self-promotion by enforcing safety standards to better enhance their public image. Therefore, from this new implementation, future studies should explore the monitoring of UAV incidents and the continued reaction of the legal system as this technology advances. Additionally, future studies should continue the examination of perceptions of UAVs, measuring other social variables (such as: class, age, location, and ethnicity) that may affect the attitude towards UAVs, and determining how these views may change over time.
REFERENCES


Bentham, Jeremy. 1843. Works, ed. Bowring, IV.


O’Kane, Sean. 2017. “DJI will now handicap your drone until you register it with the company.” *The Verge,* May 23, 2017.


APPENDICES

Appendix A Methods and Instruments
*Thematic Coding for Interviews*

**Questions 1-5:** What associations individuals have about drones and where they come from. When, What, Feelings.

Media Influence

Photography

Business

**Questions 6-8:** What feelings and attitudes individuals have towards specific group use concerning drones. Police, Private, and Persons.

Crime Perception and Safety

Unease of State Surveillance

Acceptance of companies using this service

Distrust for companies

Unease of the unknown person

**Questions 9-11:** What concerns and benefits individuals have about drones.

Risk and Regulation

Extension of humans

Efficiency and Utility
Safety Concerns

**Questions 12-15: Exposure to surveillance, notions of privacy and behaviours.**

Accustomed to surveillance, normalized to it

Tied to ‘private’ places

Minor changes in behaviours (maybe)

Notions of chilling effects

Mobile cameras

**Questions 16-18: What aspects of the technology they like or do not like.**

Photography

Can reach new places

Aspects of the future

Surveillance

Noise

Improvement

**Other Themes:**

Gender Notions of Surveillance

Orwellian Totalitarian State
Combination of Themes based on questions for a complete overview

Media Influence
- Any relation to the media being an informer on UAV technology.
- Any sort of associations the media has made about UAVs that has shaped the participant’s view of them.

Photography
- Any relation to a UAV being used for photography. This can be discussions about photos or videos that look at landscapes from a different angle.

Futuristic Innovation
- Discussion relating to UAVs being a sign of future innovation, anything relating to this can be a discussion about this technology.
- Extension of human view and travel

Gendered Notions of Surveillance and Operation
- The assumption that the drone operator is male
- The association of drones being used for perverts of males to spy on females

Exposures of Privacy and chilling effects
- Feelings of unease relating to the presence of drones on a subject’s perceived notion of privacy.
- What privacy means to the participants (maybe a separate section)
- Ties to physical space on privacy and how UAVs intrude that
- Chilling effects and changes in behavior (disciplinary)
- Mobile cameras
- Notions of Orwellian State and Big Brother

Concerning Consequences of this technology
- Risk relating to crashes and interference with airplanes
- The need for regulation
- The need for training

Possible Benefits of this technology
- Efficiency and Utility
- Can promote a safer environment
- Surveying Landscapes
- Business sectors

Use for Crime control and its influence on crime perception
- Discussions relating to the use of drones by the police as a crime control and deterrence measure.
- Discussions relating to the presence of police drones indicating that an area may be a ‘hotspot’ for crime.
Interview Questions

1. What do you do, what do you study, where do you work? Tell me about yourself.

2. How did you first hear about UAVs/ drones?
   a. Probe into discovering what the context was for the topic of the UAVs to emerge.

3. Have you ever seen a UAV/ drone in person before, other than this particular experiment?
   a. If yes, probe into that experience and ask how the presence of that UAV/ drone made them feel.
      i. Ask them why they would think that the presence of that UAV/drone made them feel that certain way.
   b. If no, ask them how the presence of this UAV/ drone made them feel.
      i. Ask them why they would think that the presence of this UAV/drone made them feel a certain way.
   c. If the respondent is in the control group and has never seen a UAV/ drone in person before ask them how they might perceive how the presence of a UAV/ drone might make them feel.
      i. Ask them why they would think that a UAV/ drone might make them feel this way.

4. Based on your word associations of UAVs/ drones, you answered ___ ___ ___, could on expand on those three words?

5. What would you say drones mean to you?
   a. Probe into why

6. If I told you that the UAV/ drone you saw flying was controlled by the police, how do you think that would make you feel?
a. If the participant was not in the experiment group, ask them how they might think that the presence of a police UAV/drone might make them feel.

b. Probe into why they would think that the use of a UAV/drone by police would make them feel that way.

c. Probe into how the use of a UAV/drone for search and rescue compared to routine patrol would make an individual feel.

7. If I told you that the UAV/drone you saw flying was controlled by some various corporation, such as Amazon, how do you think that would make you feel?

   a. If the participant was not in the experimental group, ask them how they might think that the presence of a corporate UAV/drone might make them feel.

   b. Probe into why they would think that the use of a UAV/drone by a corporate would make them feel that way.

   c. Probe into how the use of a UAV/drone for package delivery compared to routine inspection of power lines might make them feel.

8. If I told you that the UAV/drone you saw flying was being controlled by some stranger for an unknown purpose, how do you think that would make you feel?

   a. If the participant was not in the experimental group, ask them how they might think that the presence of an unknown UAV/drone might make them feel.

   b. Probe into why they would think that the use of a UAV/drone by a stranger would make them feel that way.

   c. Probe into how the use of a UAV/drone for recreational purposes might make them feel.
9. Do you have any concerns regarding the operations of UAV/ drone usage in populated areas?
   a. If yes, probe into why.
      i. What is your biggest fear concerning UAV/ drone usage in public areas?
   b. If no, probe into why.
10. Do you believe there are any potential benefits in operating UAVs/ drones in populated areas?
    a. If yes, probe into why.
    b. If not, probe into why.
11. What do you think about UAVs/ drones being used in public areas?
    a. If yes, probe into why.
       i. Possible question to add: Do you think that UAVs/ drones should not be placed in public areas?
    b. If no, probe into why.
12. How do you feel knowing that someone may be watching you through that UAV/ drone?
    a. Probe into why.
13. Do you think that the presence of a UAV/ drone might affect your behaviour in any way?
    a. If yes, probe into why.
    b. If no, probe into why.
    c. Do the participant believe that there might be a difference in their behaviour if they knew that the UAV/ drone was being controlled by the police or a corporation.
14. Do you think that the presence of UAVs/ drones in public areas affect rights to privacy?
    a. If yes, probe into why.
b. If no, probe into why.

15. What do you think seems to be the difference between CCTV (Closed Circuit Television) cameras and drones?

16. Is there anything about UAVs/ drones that you find to be cool or interesting?
   a. If yes, have them explain.
   b. If no, have them explain.

17. Is there anything about UAVs/ drones that you find unnerving or dislike?
   a. If yes, have them explain.
   b. If no, have them explain.

18. Is there anything that you would like to add or think that might be important that you thought was left out of this interview regarding UAVs/ drones in an urban context?
   a. If yes, probe into their understanding of why they think it was important.
   b. If not end interview.

*If participants brought up issues of privacy early on in the interview, they were probed on to how they defined privacy*
Time and Locations of Field Experiment

**Location #1 – Cricket Field (Approved by Kingston Parks and Recreation)**
- Tuesday, September 27th 2016 at 10:00 am to 11:00 am.
- Thursday, September 29th 2016 at 2:30 pm to 3:30pm.

**Location #2 – Breakwater Park (Approved by Transport Canada by Jeff Reitzel)**
- Friday September 30th 2016 at 6:00pm to 7:00pm

**Location #3 – Kingston Memorial Centre Park (Approved by Transport Canada by Jeff Reitzel)**
- Wednesday, October 5th 2016 at 4:00pm to 5:00pm

*Control Groups were replicated in the same locations during the same times, control groups ran until the sample size was equal to that which was obtained from the experimental group.*

Debriefing Script and Introduction

Hello there,

My name is Brandon Rodrigues and I am a graduate student here at Queen’s University conducting research for my master’s thesis. I am conducting a study on how individuals react to the presence of UAVs and what opinions they may have about them. The drone that you saw when you were walking by was used in order to measure how individuals would react to the presence of such a device. The operator of the machine is located over there (point to drone operator). If you have the time would you like to participate in this study? Your participation would require you to answer a simple word association task regarding drones right now which would approximately take two minutes and a follow up interview to be arranged at a later date in which you will be compensated for participating in this study by being placed in a draw to win one out of three Starbucks gift cards each having a value of $20. The interview will last anywhere from 30 minutes to an hour at a date and time arranged later on. Would you like to participate in this study?

If yes proceed with word-association task and then collect relevant information to contact participants for interviews.

If not, thank participants for their time.
Demographic Form and Survey Question

Please fill out all necessary information below and complete the single survey question at the bottom of the page.

Name: _______________________________________________________

Phone number: ________________________________________________

Email: _______________________________________________________


Gender: Male: ___    Female: ___    Choose to not Identify: ___

Survey Question

Please place an X on either side of the scale to indicate how you agree with each phrase using to describe the word:

DRONE

Good ___: ___: ___: ___: ___: ___: ___ Bad

Significant ___: ___: ___: ___: ___: ___: ___ Insignificant

Fast ___: ___: ___: ___: ___: ___: ___ Slow
Letter of Information and Consent Form

Project title: Exploring the Intersubjective relationship between risk perception and affect on how the public responds to the presence of UAVs (Unmanned aerial vehicles)

Principal Investigator/Researcher: Brandon Rodrigues and Dr. David Murakami-Wood (supervisor) affiliated with Queen’s University

Purpose:

Unmanned aerial vehicles (UAVs), otherwise known as drones have become increasingly popular over the past decade. With recent media attention circulating around the introduction of implementing drones into public areas, as with Amazon’s delivery drones it becomes important to see how the public reacts to the presence of these devices within their area. Therefore, the goal of this project is to gain a better understanding of how individuals view and feel about the presence of drones in public areas. You will be participating in a semi-structured interview. You will be asked how you view and feel about drone usage in public areas as well as possible benefits and consequences that this technology will bring. Your participation is vital in order to gain a better understanding of how individuals respond to this new technology and what associations may be tied to drones. Your signature below indicates that you understand and consent to the expectations and requirements of participating in the study.

The word-association task should take no longer than 5 minutes.

The interview should take no longer than an hour and there will be no follow-up studies.

There are no known risks to participation in the study.

Participation is voluntary and you are free to withdraw at any time. This means that you may withdraw from the study even after the interview process if you feel uncomfortable. In that event contact me and I will immediately destroy your information. Your signature below indicates that you understand that your participation is voluntary and that you are free to withdraw at any time.

You are not obliged to answer any questions that you find objectionable or which make you feel uncomfortable.

With your permission recording devices will be used and your information will be used within my thesis project. Once the interview is complete, your information will be transcribed in a secure location for further analysis. Once the study is fully completed your information on the recording device will be destroyed.

Your identification and information will remain confidential through the use of through the use of randomized coded acronyms within the report. Reports of this study will use interview data for analysis. Interview notes will be stored on a password-protected computer at Queen’s University and destroyed once the study is completed. Only the researcher (Brandon Rodrigues) will have access to this data. Your data will be destroyed approximately 1 to 2 years after the study is completed. Your signature below indicates that you understand these provisions around confidentiality.

Research results will be presented at a conference and/or in an open access publication relevant to the digital library community. There are no foreseeable secondary uses of the data.
This study has been granted clearance according to the recommended principles of Canadian ethics guidelines, and Queen's policies.

You will be entered into a draw to win one out of three (a 33% chance) $20 Starbucks gift cards on completion of all or part of the interview.

Your signature below indicates that you are aware that you may contact the principal investigator, or the General Research Ethics Board if you have any questions, concerns or complaints about the research procedures.

Principle investigator <insert name and contact information>  
General Research Ethics Board Chair at 613-533-6081 or email: chair.GREB@queensu.ca. 
Or contact Brandon Rodrigues (Principal Investigator) at either 647-521-0589 or at Brandon.rodrigues@queensu.ca or Dr. Murakami-Wood (Supervisor) at 613-533-6000 ext. 74490 or at dmw@queensu.ca or Dr. Robert Beamish at 613-533-6000 ext. 74475 or at beamishr@queensu.ca.

Your signature below indicates that you have read this Letter of Information and have had any questions answered to your satisfaction. Please keep a copy of this letter for your records.

Name: ___________________________
Date: ____________________________
Signature: ________________________

Contact Information

Principal Investigator: Brandon Rodrigues  
Location: Queen’s University, Mac-Corry C505  
Email: Brandon.rodrigues@queensu.ca  
Phone number: 647-521-0589

 Supervisor: Dr. Murakami-Wood  
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Email: dmw@queensu.ca  
Phone number: 613-533-6000 ext. 74490

Departmental Head: Dr. Robert Beamish  
Location: Queen’s University, Mac-Corry D424  
Email: beamishr@queensu.ca  
Phone number: 613-533-6000 ext. 74475
Appendix B Ethical Considerations and Documentations

Ethical Considerations

This quasi-experimental qualitative research project which is examining the affectual and perceptual responses of individuals exposed to UAVs had various ethical concerns to consider. This research project followed the three core principles for conducting research on human subjects. Respect for persons, concern for welfare and adhering to the principles of justice (Bryman, Bell and Teevan 2012). Therefore, individuals were not to be used as a means to an end and they were made aware of their rights and all relevant information pertaining to this study (Bryman, Bell and Teevan 2012: 194). To start off, only individuals who are eighteen years and above were asked to participate in this study. Even though it is noted that those younger than eighteen could be exposed to the UAV, this strategy is to ensure that their ‘potential harm’ remains at a minimal. Secondly, since UAVs often come equipped with video recording devices, it was guaranteed that the camera was be turned off at all times as a way to maintain privacy. Thirdly, this experiment did involve some form of deception since individuals were not aware that a UAV will be operating in one of the locations that they are in and for what purpose. As a safety measure, individuals exposed to the UAV were told the nature of the experiment and debriefed after the word-association task or even if they choose not to participate. Fourthly, participants who agreed to participate were asked for their informed consent at the beginning of the interviews. This was accomplished by making sure that individuals understood what was being asked of them and for them to sign off on a legal document. Fifthly, anonymity among participants was maintained as a way to protect individual identities. Participants were coded through alphabetical and numerical identifiers as a way to protect them from potential harm. Sixthly, confidentiality was ensured from that the information I collected from my participants was not revealing any sort of identifiers to anyone else unless my
participants gave consent permitting disclosure. This was accomplished through keeping my information on a secure (encrypted) USB key and keeping written notes locked inside my office.

Since this study incorporated the use of a UAV, the regulations made by Transport Canada on proper and safe UAV usage were upheld. A flow chart made by Transport Canada has been included in the appendix D for referencing. As such, the UAV was less than 2kilo grams so that in the event of loss of control of the aircraft, only minimal damage will be sustained. The UAV will also maintain minimal speed and will remain less than 20 feet in terms of height. Additionally, the quasi-experiment was only run in acceptable weather conditions in a clear open field. Furthermore, the UAV operator was properly qualified and trained for the task and the UAV in question remained in visual sight of the Jeff Reitzel, his assistant and I. Finally, insurance was acquired for this research project as a safety measure in the unlikely event of an accident through Jeff Reitzel.
Flying an unmanned aircraft?
Find out if you need permission from Transport Canada

START

I use my aircraft for work or research (anything beyond the fun of flying)

No

Yes

It weighs more than 35 kg

No

Yes

It weighs more than 25 kg

Yes

No

It weighs less than 2 kg

Yes

No

I have read and can meet the exemption conditions for UAVs less than 2 kg

No

Yes

I have read and can meet the exemption conditions for UAVs from 2 kg up to and including 25 kg

No

Yes

You don’t need permission, but you must meet the exemption conditions

You must apply for a Special Flight Operations Certificate

Learn more

Tips to fly safely

- Fly during daylight and in good weather
- Always keep your aircraft in sight
- Respect the privacy of others
- Don’t fly close to airports, in populated areas, near moving vehicles, or higher than 90 metres

Read the Do’s and Don’ts

You don’t need permission, but you must meet the exemption conditions

AND notify Transport Canada with:

1. Contact information
2. UAV model
3. Description of operation
4. Geographical boundaries of operation

Notify Transport Canada
The City of Kingston, 216 Ontario Street, Kingston, Ontario, K7L 2Z3 hereby grants Rodrigues Babandari Queen’s Research (hereinafter called the “Licensee”) permission to use the Facilities as outlined, subject to the Terms and Conditions of this Agreement contained herein and attached hereto of all which form part of this Agreement.

I. Purpose of Use
   Baseball Research Project

II. Conditions of Use
   Please sign and post at 613-394-3255 to confirm contract. Payment will be made in person by cash, cheque, debit, pre-authorized debit, or credit card at 3150 Gardiners Road K7P 0E6. Cheques made payable to City of Kingston can be mailed to City of Kingston, Facility Bookings Office, 216 Ontario Street, Kingston ON K7L 2Z3. User must provide taxes and line diamond.

III. Date and Times of Use
   # of Bookings: 2
   Starting: 27 Sep 2016
   Ending: 20 Sep 2016
   Expected: 0

<table>
<thead>
<tr>
<th>Facility/Equipment</th>
<th>Day</th>
<th>Start Date</th>
<th>Start Time</th>
<th>End Date</th>
<th>End Time</th>
<th>Fee</th>
<th>XFee</th>
<th>Tax</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>City Park - Cricket Field Ball</td>
<td>Tue</td>
<td>27 Sep 2016</td>
<td>10:00 AM</td>
<td>27 Sep 2016</td>
<td>11:00 AM</td>
<td>$15.13</td>
<td>$10.00</td>
<td>$2.77</td>
<td>$27.90</td>
</tr>
<tr>
<td>City Park - Cricket Field Ball</td>
<td>Thu</td>
<td>29 Sep 2016</td>
<td>12:00 PM</td>
<td>29 Sep 2016</td>
<td>03:00 PM</td>
<td>$15.13</td>
<td>$10.00</td>
<td>$2.77</td>
<td>$27.90</td>
</tr>
</tbody>
</table>

IV. Additional Fee
   Extra Fee - Bookings
   Liability Insur. - Park up to 50 28Km
   Hours | Quantity | Charge | Tax | Total |
   2.00 | 2 | $20.00 | $1.00 | $21.50 |
   2.00 | 2 | $20.00 | $1.00 | $21.50 |

V. Payment Method
   Rental Fees | Extra Fees | Tax | Rental Total | Damage Deposit | Total Applied | Balance | Current |
   $10.26 | $20.00 | $5.54 | $15.80 | $5.54 | $0.00 | $35.60 | $10.00 |

HST #: 87300496RTO001

Rental charges are due according to the following schedule:

<table>
<thead>
<tr>
<th>Date</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>September 2016</td>
<td>$10.00</td>
</tr>
</tbody>
</table>

VI. Outdoor Facilities Permit Terms and Conditions

1. The Applicant agrees to indemnify and save harmless the City of Kingston and related entities, its officers, agents and employees from and against all claims, demands, losses, costs, damages, expenses, or other proceedings by whomsoever made, sustained, brought or prosecuted in any manner, based upon, occasioned by, or attributable to any injury or damage arising or resulting from any act or omission of the Applicant, its servants or agents in using the said premises.

2. All parties are required to provide proof of commercial general liability insurance coverage in an amount no less than $2M. The proof to be submitted is by way of an insurance certificate, specifying the event that is being covered, and must indicate that the City of Kingston has been added as an additional insured.

3. Payment for all permits must be received in advance of the start of the bookings. If a permit has multiple bookings over several dates, payments are to be arranged on a monthly basis with post-dated payments being received at the Facility Bookings office upon confirmation of the permit. Payments can be made by cash, cheque, debit, MasterCard, Visa or American Express with post-dated payments being accepted only if cheque, and credit cards only. Cheques should be made payable to the City of Kingston.

   i) Events or meetings will not attend or discriminate or grounds prohibited under the Ontario Human Rights Code.
   ii) Events or meetings may not promote or prejudice hatred or defilement of any groups covered by section 116 of this declaration.

4. The Corporation of the City of Kingston reserves the right to cancel any scheduled activity. In the event that the facility is required for an event of municipal significance or for a special event sponsored by a community group.

5. It is understood that the Corporation of the City of Kingston, Facilities Management Division, or its duly appointed representative, will have the
right to revoke this permit and cancel the event at any time in order to ensure the safety of the public or for any reason including any breach of these terms and conditions. Users are advised of the cancellation of the event by the City representative. The applicant shall immediately cease all activity associated with the event.
6. Unauthorized vehicles are absolutely prohibited in the park, including organizers, performers, and/or contractors acting on behalf of the applicant. Due to the presence of underground electrical and irrigation, absolutely no pegs, or stakes (tees, markers, signs) are to be driven into the ground unless a Facility Bookings representative or their designate is present to approve the location. Appointments must be made with staff at least one week before set up, by calling (613) 548-4291, extension 1261.
7. The Applicant shall ensure that any voice and/or instrument amplification, or other noise source, does not interfere with adjacent activities, residents, businesses, etc. and the Applicant shall ensure that the event activities are in compliance with all local, Provincial and Federal laws including but not limited to the City of Kingston noise bylaw.
8. The presence of bonfires or open flame is prohibited without written permission by the Chief of the Kingston Fire and Rescue.
9. If additional power is required other than what is supplied in the facility, then all equipment is subject to Hydro Inspection. This will apply to any equipment that cannot be plugged in to existing receptacles and all equipment must be CSA approved. Inspection costs are the responsibility of the applicant.

10. No person shall sell, advertise, announce, or display goods or merchandise, nor carry on any commercial activity, unless approved in writing by a City of Kingston Representative and unless the appropriate licences are approved and in place 72 hours in advance of the event.
11. The facility is to be used only on the date(s) and hour(s) indicated and shall not exceed 11:00 p.m. unless permission is approved from the Commissioner of Community Development Services Group and/or City Council.
12. Noise: Requests for waivernoise to be open outside of regular hours/season (Victoria Day Weekend to Labour Day) or for commercial events, may require the applicant to pay for the costs, supplies and labour. Regular hours of operation are 7:00 a.m. to 10:00 p.m. – 7 days per week.
13. The consumption of alcoholic beverages is prohibited in all Municipal Facilities, with the exception of licensed events arranged in advance with the Facility Bookings Staff.
14. The permit is not transferable.
15. Any contravention of these terms may result in the termination of the event and future use of the facility by the applicant may be refused.
16. All areas, building, equipment and property of the City of Kingston shall be left clean and in an undamaged condition. Each group must provide a disassembly plan no less than two weeks prior to the use of the park, which will be approved by Facilities Management Division representatives.

vi) Other Information

Proof of Insurance: Purchased through Booking Office

The undersigned has read and is bound by the Permit License and the Terms and Conditions contained therein and attached hereon, and hereby warrants and represents that he/she exercises the Permit License on behalf of the Licensee and has sufficient power, authority and capacity to bind the Licensee with his/her signature.

X: Brandon Rodrigues

Rodrigues/Balaban Queen's Research
150 Princess ST # 2
Kingston ON K7L 5M6

Business: (647) 921-0989
Fax: (513)

Date: April 15, 2016

Sarah Burnett

Administrative Services
Recreation & Leisure Services Division
Facility Bookings - INVESTA Centre
1550 Gardiners Road, Kingston, ON K7P 0E5

Date: March 16, 2016
**AVIATION INSURANCE POLICY**

**POLICY NUMBER**
SRU-189

Effected with certain Lloyd's Underwriters ("the Insurer") through Lloyd's Approved Coverholder ("the Coverholder"); Special Risk Insurance Managers Ltd.
Suite 103, 8411 200th Street, Langley, British Columbia, V2Y 0E7

**POLICY DECLARATIONS**

<table>
<thead>
<tr>
<th>Name of Insured</th>
<th>SkEye Stream Inc.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mailing Address</td>
<td>315 Rose Abbey Dr</td>
</tr>
<tr>
<td></td>
<td>Kingston, ON</td>
</tr>
<tr>
<td></td>
<td>K7K 0A4</td>
</tr>
<tr>
<td>Address of Operations</td>
<td>N/A</td>
</tr>
<tr>
<td>Policy Period (MM/DD/YYYY)</td>
<td>From 5/19/2016 To 5/18/2017</td>
</tr>
<tr>
<td></td>
<td>Both days inclusive Local Standard Time at the address of the Insured.</td>
</tr>
<tr>
<td>Broker</td>
<td>All-Risks Insurance (2570)</td>
</tr>
<tr>
<td></td>
<td>775 Strand Blvd Suite 7 Kingston, ON K7P 2S7</td>
</tr>
<tr>
<td>Broker Number</td>
<td>2570</td>
</tr>
<tr>
<td>Total Policy Premium</td>
<td>C$625</td>
</tr>
<tr>
<td>Minimum Retained Premium</td>
<td>50% minimum &amp; retained unless otherwise noted. 100% Retained</td>
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<tr>
<td>Policy Fees (Non-Refundable)</td>
<td>C$100</td>
</tr>
<tr>
<td>Total Owing</td>
<td>C$725</td>
</tr>
</tbody>
</table>

**Limit of Liability or Amount of Insurance:**

**LIMIT OF LIABILITY:** In respects to PART 6, Section (C)

CE20111153748571: C$1,000,000 per occurrence

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The insured is requested to read this policy, and if incorrect, return it immediately for alteration. In the event of an occurrence likely to result in a claim under this insurance, immediate notice should be given to the Coverholder whose name and address appears above. All inquiries and disputes are also to be addressed to the Coverholder. For the purposes of the Insurance Companies Act (Canada), this Canadian Policy was issued in the course of Lloyd's Underwriters' insurance business in Canada.

**THIS POLICY CONTAINS A CLAUSE THAT MAY LIMIT THE AMOUNT PAYABLE**

**Created On:** 2016/05/20

**Printed On:** 2016/05/20
### POLICY DECLARATIONS

<table>
<thead>
<tr>
<th>Name of Insured</th>
<th>SkyEye Stream Inc.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mailing Address</td>
<td>315 Rosa Abbey Dr, Kingston, ON, K7K 4A4</td>
</tr>
<tr>
<td>Policy Period (MM/DD/YYYY)</td>
<td>From 01/01/2017 To 04/30/2017</td>
</tr>
<tr>
<td>Brokers</td>
<td>AllPro Insurance (2577) 175 Grand St Suite 7, Kingston, ON K7P 2G7</td>
</tr>
<tr>
<td>Broker Number</td>
<td>2573</td>
</tr>
<tr>
<td>Total Policy Premium</td>
<td>$850</td>
</tr>
<tr>
<td>Minimum Retained Premium</td>
<td>$813</td>
</tr>
<tr>
<td>Policy Fees (Non-Refundable)</td>
<td>$30.</td>
</tr>
<tr>
<td>Total Owning</td>
<td>$883</td>
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</table>

To secure the payment of the premium, and subject to all terms of this policy, we agree with you to provide the insurance as stated in this policy.

**Description of Operations:** Activities of the Named Insured with respect to Commercial Aerial Photography, including filming, mapping and aerial inspection.

Locations to which this policy applies: All locations used by the Named Insured.

**Remainder:**

---

**THIS POLICY CONTAINS A CLAUSE THAT MAY LIMIT THE AMOUNT PAYABLE**

<table>
<thead>
<tr>
<th>Created On:</th>
<th>2018/05/30</th>
</tr>
</thead>
<tbody>
<tr>
<td>Printed On:</td>
<td>2016/05/20</td>
</tr>
</tbody>
</table>
April 5, 2016

SkEye Stream Inc.
Jeff Reitzel
315 Rose Abbey Drive
Kingston, ON
K7K 0A4

Subject: Special Flight Operations Certificate

Your reference number for this activity is: ATS-15-16-00061614

Dear Mr. Reitzel:


Nothing in this Special Flight Operations Certificate relieves you, the UAV operator, from complying with the provisions of any other relevant Acts, Regulations or laws or from any level of government.

Should you have any questions or concerns please do not hesitate to communicate with Civil Aviation Inspector Jeff Martin at (905) 477-6263.

Yours truly,

Mark Dixon
Technical Team Lead – Flight Operations
Operations East
Civil Aviation, Ontario Region

www.tc.gc.ca
SkEye Stream Inc.
315 Ross Abbey Drive
Kingston ON K7K 0A4
819-433-0736
jeff@skeyestream.ca
skeyestream.ca

INVOICE

INVOICE TO
Brandon Rodrigues
306-655 Prince of Wales Street
Kingston Ontario K7L 0E7

INVOICE # 1079
DATE 03-10-2016
DUE DATE 03-10-2016
TERMS Due on receipt

<table>
<thead>
<tr>
<th>ACTIVITY</th>
<th>CTY</th>
<th>RATE</th>
<th>AMOUNT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outdoor Flight Multiple locations and flights to assist in gathering information for a students UAV thesis.</td>
<td>1</td>
<td>300.00</td>
<td>300.00</td>
</tr>
</tbody>
</table>

No HST.

PAYMENT
BALANCE DUE

$0.00

Thank you for choosing SkEye Stream!

PAID
July 21, 2016

Mr. Brandon Rodrigues
Master's Student
Department of Sociology
Queen's University
Kingston ON K7L 3N6

CREB Ref #: GSOC-136-16; Romeo # 6018523
Title: "GSOC-136-16 Exploring the Intersubjective relationship between risk perception and affect of how the public responds to the presence of UAVs"

Dear Mr. Rodrigues:

The General Research Ethics Board (GREB), by means of a delegated board survey, has cleared your proposal entitled "GSOC-136-16 Exploring the Intersubjective relationship between risk perception and affect of how the public responds to the presence of UAVs" for ethical compliance with the Tri-Council Guidelines (TCPS 2 (2014)) and Queen's ethics policies. In accordance with the Tri-Council Guidelines (Article 8.14) and Standard Operating Procedures (405.001), your project has been cleared for one year. You are reminded of your obligation to submit an annual renewal form prior to the annual renewal due date (access this form at http://www.queensu.ca/raz/sumon.html; click on "Events" under "Create New Event" and "General Research Ethics Board Annual Renewal/Closure Form for Cleared Studies"). Please note that when your research project is completed, you need to submit an Annual Renewal/Closure Form in RazuSum indicating that the project is 'completed' so that the file can be closed. This should be submitted at the time of completion; there is no need to wait until the annual renewal due date.

You are reminded of your obligation to advise the GREB of any adverse event(s) that occur during this one year period (access this form at http://www.queensu.ca/raz/sumon.html; click on "Events" under "Create New Event" and "General Research Ethics Board Adverse Event Form"). An adverse event includes, but is not limited to, a complaint, a change or unexpected event that alters the level of risk for the researcher or participants or situation that requires a substantial change in approach to a participant(s). You are also advised that all adverse events must be reported to the GREB within 48 hours.

You are also reminded that all changes that might affect human participants must be cleared by the GREB. For example, you must report changes to the level of risk, applicant characteristics, and implementation of new procedures. To submit an amendment form, access the application by at http://www.queensu.ca/2013/sumon.html; click on "Events" under "Create New Event" and "General Research Ethics Board Request for the Amendment of Approved Studies". Once submitted, these changes will automatically be sent to the Ethics Coordinator, Mrs. Grill, living at the Office of Research Services for further review and clearance by the GREB or GREB Chair.

On behalf of the General Research Ethics Board, I wish you continued success in your research.

Sincerely,

John Freeman, Ph.D.
Chair
General Research Ethics Board

e: Dr. David Murakami Wood, Supervisor
Dr. David Murakami Wood, Chair, Unit REB
Ms. Michelle Underhill, Dept. Admin.
September 14, 2016

Mr. Brandon Rodrigues
Master's Student
Department of Sociology
Queen's University
Kingston, ON, K7L 3N6

Dear Mr. Rodrigues:

RE: Amendment for your study entitled: GSOC-136-16 Exploring the Intersubjective relationship between risk perception and affect of how the public responds to the presence of UAVs; TRAQ # 6018823

Thank you for submitting your amendment requesting the following changes:

1) To add another measure aimed at capturing affect;
2) To add a demographic component aimed at capturing gender and age;

By this letter you have ethics approval for these changes.

Good luck with your research.

Sincerely,

[Signature]

John Freeman, Ph.D.
Chair
General Research Ethics Board

c. Dr. David Murakami Wood, Supervisor
Certificate of Completion

This document certifies that

Brandon Rodrigues

has completed the Tri-Council Policy Statement:
Ethical Conduct for Research Involving Humans
Course on Research Ethics (TCPS 2: CORE)

Date of Issue: 4 April, 2016